April 1977 Number 392-Part I

Solar-Geophysical Data prompt reports

BA MACRS

Data for March 1977–February 1977

Explanation of Data Reports Issued as Number 390 (Supplement) February 1977

ERRATA PAGE 20
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Solar - Geophysical Data

NO. 392 APRIL 1977

Part I (Prompt Reports)

DATA FOR
MARCH 1977
FEBRUARY 1977

NATIONAL GEOPHYSICAL AND SOLAR - TERRESTRIAL DATA CENTER
BOULDER, COLORADO

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SOLAR - GEOPHYSICAL DATA

No. 392

Issued in two parts

Helen E. Coffey, Editor

J. Virginia Lincoln, Director
Solar - Terrestrial Data Services Division

CONTENTS

Part I (Prompt Reports)

	Page
Index for 1976 and 1977	2
Data for March 1977	3-23
Data for February 1977	25-105

Part II (Comprehensive Reports)

Index for 1976 and 1977	2
Data for October 1976	3-23
Data for September 1976	25-35
Miscellaneous Data	37-38
Geomagnetic Indices Sudden Commencements and Solar Flare Effects - January 1977	

INDEX FOR 1976 - 1977 DATA PUBLISHED IN "SOLAR-GEOPHYSICAL DATA"

		1976 Aug	Sep	Oct	Nov	Dec	1977 Jan	Feb	Mar
A.	Solar and Interplanetary Phenomena								
A.1	Sunspot Drawings	386A 22	387A 26	388A 26	389A 26	390A 28	391A 34	392A 28	
A.2a	Zürich Provisional Relative Sunspot Numbers R_z	385A 7	386A 7	387A 7	388A 7	389A 7	390A 7	391A 7	392A 7
A.2b	Zürich Final Sunspot Numbers R_z	391A 6	391A 6	391A 6	391A 6	391A 6			
A.2c	American Relative Sunspot Numbers R_A'	385A 7	386A 7	387A 7	388A 7	389A 7	390A 7	391A 7	392A 7
A.3a	Mt. Wilson Magnetograms	386A 22	387A 26	388A 26	389A 26	390A 28	391A 34	392A 28	
A.3b	Mt. Wilson Magnetic Characteristics of Sunspots	386A 84	387A 86	388A 88	389A 86	390A 90	391A 96	392A 84	
A.3c	Kitt Peak Magnetograms	386A 22	387A 26	388A 26	389A 26	390A 28	391A 34	392A 28	
A.3d	Mean Solar Magnetic Field (Stanford)	390A 21	390A 21	390A 21	390A 21	390A 21	390A 21	391A 29	392A 21
A.4	$H\alpha$ Spectroheliograms	386A 22	387A 26	388A 26	389A 26	390A 28	391A 34	392A 28	
A.5	Calcium Plage Drawings - McMath (or Catania)	386A 22	387A 26	388A 26	389A 26	390A 28	391A 34	392A 28	
A.5a	Calcium Plage (McMath) and Sunspot Regions	386A 84	387A 86	388A 88	389A 86	390A 90	391A 96	392A 84	
A.5b	McMath Daily Calcium Plage Indices	386A 89	387A 93	388A 94	389A 90	390A 95	391A101	392A 88	
A.6	$H\alpha$ Synoptic Charts	386A 20	387A 26	388A 26	389A 26	390A 26	391A 32	392A 26	
A.6b	Synoptic Chart and Active Regions (Paris)	390B 4	391B 4	392B 4					
A.7f	Helium D3 Chromosphere (Big Bear)	385A 21	---	387A 20	388A 21	389A 21	390A 18	391A 22	392A 18
A.7g	Helium Synoptic Maps (KPNO)						390A 19	391A 23	392A 19
A.7h	Coronal Line Emission (Sac Peak)						391A 34	392A 28	
A.8aa	2800 MHz - Daily Values of Solar Flux (ARO-Ottawa)	385A 7	386A 7	387A 7	388A 7	389A 7	390A 7	391A 7	392A 7
A.8ac	2800 MHz - Daily Values of Adj. Solar Flux (ARO-Ottawa)	385A 7	386A 7	387A 7	388A 7	389A 7	390A 7	391A 7	392A 7
A.8g	Daily Values of Adjusted Solar Flux (AFGL)	385A 7	386A 7	387A 7	388A 7	389A 7	390A 7	391A 7	392A 7
A.9cb	8.6 mm Radio Maps of the Sun (NELC - La Posta)	386A 22	387A 26	388A 26	389A 26	390A 28	391A 34	392A 28	
A.9d	2 cm Radio Maps of the Sun (NELC - La Posta)	386A 22	387A 26	388A 26	389A 26	390A 28	391A 34	392A 28	
A.10a	169 MHz - Interferometric Observations (Nancay)	---	386A 12	387A 12	388A 12	389A 12	390A 12	391A 13	392A 12
A.10c	21 cm East-West Solar Scans (Fleurs)	385A 14	387A101	388A101	388A 14	389A 14	391B 43	391A 15	
A.10d	43 cm East-West Solar Scans (Fleurs)	385A 15	387A102	388A102	388A 15	389A 15	391B 44	391A 16	
A.10e	10.7 cm East-West Solar Scans (Ottawa-ARO)	385A 13	386A 13	387A 13	388A 13	389A 13	390A 13	391A 14	392A 13
A.11g	Solar X-ray (SMS/GOES)	385A 18	386A 16	387A 18	388A 19	389A 18	390A 15	391A 19	392A 15
A.11h	Solar X-ray (OSO-8; 1975-057A)	386A 22	387A 26	388A 26	389A 26	390A 28	391A 34	392A 28	
A.11i	Solar X-ray (Columbia U.)		391B 25						
A.12ba	Cosmic Ray Protons (Pioneers 6 & 7)	---	386A 15	387A 16	388A 18	---	---	391A 25	---
A.12bb	Cosmic Ray Protons (Pioneers 8 & 9)	---	---	387A 17	---	---	---	391A 27	---
A.12e	Energetic Solar Particles (IMP H & J)	390B 23	391B 20	392B 18					
A.13a	Solar Wind (Pioneers 6 & 7)	---	386A 15	387A 16	388A 18	---	---	391A 25	---
A.13ab	Solar Wind (Pioneers 8 & 9)	---	---	387A 17	---	---	---	391A 27	---
A.13d	Solar Wind from IPS Measurements			387A 15	388A 17	389A 17	390A 24	391A 24	392A 23
A.13e	Solar Plasma (IMP H & J)	390B 22	391B 19	392B 19					
A.17	Interplanetary Magnetic Field (Pioneer 8)	---	---	---	---	---	---	---	---
A.17	Interplanetary Magnetic Field (Pioneer 9)	---	---	387A 17	---	---	---	391A 27	---
A.17c	Inferred IP Magnetic Field	385A 22	386A 18	387A 21	388A 22	389A 22	390A 20	391A 28	392A 20
A.18	Interplanetary Electric Field (Pioneer 8)	---	---	---	---	---	---	---	---
A.18	Interplanetary Electric Field (Pioneer 9)	---	---	387A 17	---	---	---	391A 27	---
B.	Ionospheric (and Radio Wave Propagation) Phenomena								
B.52	Graphs of Transmission Frequency Range	386A112	387A116	388A116	389A110	390A116	391A118	392A104	
B.53	Quality Figures Based on Frequency Ranges	386A114	387A118	388A118	389A109	390A118	391A120	392A103	
C.	Flare-Associated Events								
C.1a	Optical Observations Flares	385A 10	386A 10	387A 10	388A 10	389A 10	390A 10	391A 11	392A 10
C.1ba	Optical Observations Flares (Standardized Data)	390B 6	391B 8	392B 8					
C.1d	Flare Patrol Observations	385A 11	386A 11	387A 11	388A 11	389A 11	390A 11	391A 12	392A 11
C.1d	Flare Patrol Observations	390B 11	391B 13	392B 13					
C.1e	Flare Indices (by day)	390B 10	391B 12	392B 12					
C.1f	Flare Indices (by Region)	391B 39	392B 35						
C.3	Solar Radio Waves - Outstanding Occurrences	390B 12	391B 14	392B 14					
	Solar Radio Waves - Fixed Frequencies - Selected	385A 16	386A 14	387A 14	388A 16	389A 16	390A 14	391A 17	392A 14
C.3t	43.25, 80 and 160 MHz Selected Bursts (Culgoora)	390B 42	390B 43	390B 44	391B 45	391B 46			
C.4a	Solar Radio Spectral Obs. (Fort Davis)	386A 91	387A 95	388A 96	389A 92	390A 97	391A103	392A 90	
C.4b	Solar Radio Spectral Obs. (Boulder)	---	---	---	---	---	---	---	
C.4d	Solar Radio Spectral Obs. (Culgoora)	387B 32	389B 29	389B 32	389A 92	391B 47	391A103		
C.4e	Solar Radio Spectral Obs. (Weissenau)	386A 91	387A 95	388A 96	389A 92	390A 97	391A103	392A 90	
C.4f	Solar Radio Spectral Obs. (Sagamore Hill)	386A 91	387A 95	388A 96	389A 92	390A 97	391A103	392A 90	
C.4h	Solar Radio Spectral Obs. (Dwingeloo)	386A 91	387A 95	388A 96	389A 92	390A 97	391A103	392A 90	
C.4i	Solar Radio Spectral Obs. (Dürnten)	386A 91	387A 95	388A 96	389A 92	390A 97	391A103	392A 90	
C.4j	Solar Radio Spectral Obs. (Manila)	386A 91	387A 95	388A 96	389A 92	390A 97	391A103	392A 90	
C.5e	Solar X-ray (SMS/GOES)	385A 20	---	---	---	389A 20	390A 17	391A 21	392A 17
C.5f	Solar X-ray (Columbia U.)								
C.6	Sudden Ionospheric Disturbances	386A 90	387A 94	388A 95	389A 91	390A 96	391A102	392A 89	
D.	Geomagnetic and Magnetospheric Phenomena								
D.1a	Geomagnetic Indices Kp, Kn, Ks, Km, Ap, aa, Cp	386A104	387A108	388A108	389A102	390A107	391A114	392A 97	
D.1ba	27-day Chart of Kp Indices	386A106	387A110	388A110	389A104	390A109	391A116	392A 99	
D.1c	27-day Chart of C9					390A110			
D.1d	Principal Magnetic Storms	386A109	387A113	388A113	389A107	390A114	391A117	392A101	
D.1e	Reduced Magnetograms	---			---	---			
D.1f	Sudden Commencement and Solar Flare Effects	386A110	387A114	388A114	389A108	390A115	392B 38	392A102	
D.1g	Equatorial Indices Dst	386A108	387A112	388A112	389A106	390A113		392A100	
F.	Cosmic Rays								
F.1a	Cosmic Ray Neutron Counts (Deep River)	386A 99	387A103	388A103	389A 97	390A106	391A109		
F.1b	Cosmic Ray Neutron Counts (Climax)	386A 99	387A103	388A103	389A 97	390A106	391A109	392A 96	
F.1e	Cosmic Ray Neutron Counts (Alert)	386A 99	387A103	388A103	389A 97	390A106	391A109		
F.1f	Cosmic Ray Neutron Counts (Calgary)	386A 99	387A103	388A103	389A 97	390A106			
F.1g	Cosmic Ray Neutron Counts (Sulphur Mountain)	386A 99	387A103	388A103	389A 97	390A106			
F.1h	Cosmic Ray Neutron Counts (Thule)	---	---	---	---				
F.1i	Cosmic Ray Neutron Counts (Kiel)	386A 99	387A103	388A103	389A 97	390A106	391A109	392A 96	
F.1j	Cosmic Ray Neutron Counts (Tokyo)	386A 99	387A103	388A103	389A 97	390A106	391A109	392A 96	
H.	Miscellaneous								
H.60	IUWDS Alert Decisions	385A 5	386A 5	387A 4	388A 5	389A 4	390A 4	391A 5	392A 5
H.62	Abbreviated Calendar Record	391B 32	392B 28						

Note: A = Part I, B = Part II.

386A 22 listed under 1976 Aug shows that data for August 1976 were contained in *Solar-Geophysical Data* Number 386 - Part I beginning on page 22.

MARCH 1977 DATA

Contents

	Page
Alert Period	
IUWDS Alert Periods (Advance and Worldwide)	5
Daily Solar Indices	
12-Month Tables Sunspot Numbers, R_Z, and 2800 MHz Flux Adjusted to 1 A.U.	6
Combined Table Sunspot Numbers and Solar Fluxes	7
Graph of Sunspot Cycles	8
Zürich Smoothed Observed and Predicted Sunspot Numbers	9
Solar Flares	
Hα Solar Flares	10
No-Flare-Patrol Chart	11
Solar Radio Waves	
169 MHz Solar Interferometric Chart - Nancay	12
10.7 cm East-West Solar Scans - ARO, Ottawa	13
21 cm East-West Solar Scans - Fleurs (not available at time of publication)	
43 cm East-West Solar Scans - Fleurs (not available at time of publication)	
Selected Fixed-Frequency Occurrences	14
Solar X-ray Radiation	
SMS-2 GOES	15-17
Coronal Holes	
Helium D3 Chromosphere	18
Helium 10830 Å Synoptic Map	19
Spacecraft Observations	
(No observations)	
Inferred IP Magnetic Field Polarities	20
Mean Solar Magnetic Field	
Stanford Mean Solar Magnetic Field Map	21
Stanford Mean Solar Magnetic Field Table	22
Solar Wind Measurements	
Scintillation Observations	23

ALERT PERIODS

INTERNATIONAL URSIGRAM AND WORLD DAYS SERVICE

MARCH 1977

SUMMARY OF THE GEOALERT WWA MESSAGES

Message serial number	Date of issue	Date of observation	Wolf number	10 cm solar flux	A index	Active Regions: Location Lat-Long	Flares: No. of Total	Flares: M	Flares: X	Outstanding events	Forecasts: Date	Forecasts: Location Lat-Long	Forecasts: Desc*	Alert Situations
60	01	28	00	74	05	-	-	-	-		01	SPOTNIL		SOLQUIET MAGQUIET
61	02	01	00	74	05	-	-	-	-		02	SPOTNIL		SOLQUIET MAGQUIET
62	03	02	12	77	05	N18E71	0	0	0		03	N18E71	Q	SOLQUIET MAGQUIET
63	04	03	23	76	01	N17E57 N25W05	0 0	0 0	0 0		04	N17E57 N25W05	Q Q	SOLQUIET MAGQUIET
64	05	04	12	78	03	N17E45	0	0	0		05	N17E45	Q	SOLQUIET MAGQUIET STRATWARM ALERT /SATURDAY/ STRATWARM INTENSIFYING OVER NORTHERN EURASIA IN THE MID-STRATOSPHERE AND OVER ARCTIC REGION IN THE UPPER STRATOSPHERE.
65	06	05	13	79	02	N19E32	0	0	0		06	N19E32	Q	SOLQUIET MAGALERT 06/09
66	07	06	11	79	05	N17E18	0	0	0		07	N17E18	Q	SOLQUIET MAGALERT MINOR 07/09
67	08	07	11	78	07	N17E06	0	0	0		08	N17E06	Q	SOLQUIET MAGALERT 08/09 STRATWARM ALERT /TUESDAY/ STRATWARM EXISTS NORTHERN EURASIA TO ARCTIC REGION.
68	09	08	19	83	10	N17W06 N21W04	1 1	0 0	0 0		08	N17W06 N21W04	E E	SOLQUIET MAGNIL STRATWARM ALERT /WEDNESDAY/ STRATWARM EXISTS NORTHERN EURASIA TO ARCTIC REGION.
69	10	09	24	81	35	N17W16 N20W19	0 3	0 0	0 0		10	N17W16 N20W19	Q E	SOLQUIET MAGALERT 10 STRATWARM ALERT /THURSDAY/ STRATWARM EXISTS ARCTIC REGION.
70	11	10	26	82	19	N18W32 N21W31	0 0	0 0	0 0		11	N18W32 N21W31	Q Q	SOLQUIET MAGNIL STRATWARM ALERT /FRIDAY/ STRATWARM EXISTS ARCTIC REGION.
71	12	11	22	80	15	N18W44 N21W41	0 0	0 0	0 0		12	N18W44 N21W41	Q Q	SOLQUIET MAGQUIET STRATALERT /SATURDAY/ STRATWARM REACHING MAXIMUM IN POLAR REGION IN MIDDLE AND UPPER STRATOSPHERE WITH EASTERLY CIRCULATION APPROACHING POLE FROM SIBERIAN ARCTIC. FURTHER MODERATE WARMING EXPECTED IN ARCTIC STRATOSPHERE.
72	13	12	22	80	22	N18W58 N21W55	0 1	0 0	0 0		13	N18W58 N21W55	Q Q	SOLQUIET MAGQUIET
73	14	13	11	79	15	N22W65	0	0	0		14	N22W65	Q	SOLQUIET MAGQUIET
74	15	14	00	78	16	-	-	-	-		15	SPOTNIL		SOLQUIET MAGQUIET
75	16	15	00	76	07	-	-	-	-		16	SPOTNIL		SOLQUIET MAGQUIET
76	17	16	00	75	05	-	-	-	-		17	SPOTNIL		SOLQUIET MAGQUIET
77	18	17	34	74	08	S19E20 S18W14 S07W04	0 0 0	0 0 0	0 0 0		18	S19E20 S18W14 S07W04	Q Q Q	SOLQUIET MAGQUIET
78	19	18	00	75	13	-	-	-	-		19	SPOTNIL		SOLQUIET MAGQUIET
79	20	19	00	75	04	-	-	-	-		20	SPOTNIL		SOLQUIET MAGQUIET
80	21	20	00	73	10	-	-	-	-		21	SPOTNIL		SOLQUIET MAGQUIET
81	22	21	12	73	08	S30W27	0	0	0		22	S30W27	Q	SOLQUIET MAGQUIET
82	23	22	14	75	08	S30W41	0	0	0		23	S30W41	Q	SOLQUIET MAGQUIET
83	24	23	12	75	11	S31W54	0	0	0		24	S31W54	Q	SOLQUIET MAGQUIET
84	25	24	00	75	10	-	-	-	-		25	SPOTNIL		SOLQUIET MAGQUIET
85	26	25	11	74	11	N30E66	0	0	0		26	N30E66	Q	SOLQUIET MAGQUIET
86	27	26	11	75	13	N26E54	0	0	0		27	N26E54	Q	SOLQUIET MAGQUIET
87	28	27	25	75	06	N24E39 N21W06	0 0	0 0	0 0		28	N24E39 N21W06	Q Q	SOLQUIET MAGQUIET
88	29	28	24	75	08	N23E27 N19W18	0 0	0 0	0 0		29	N23E27 N19W18	Q Q	SOLQUIET MAGQUIET
89	30	29	24	76	11	N23E13 N21W30	0 0	0 0	0 0		30	N23E13 N21W30	Q Q	SOLQUIET MAGQUIET
90	31	30	12	75	05	N22E03	0	0	0		31	N22E03	Q	SOLQUIET MAGQUIET
91	01	31	13	74	03	N23E01	0	0	0		01	N23E01	Q	SOLQUIET MAGQUIET

* Q=Quiet E=Eruptive A=Active P=Proton C=Caution D=Doubtful O.G.=Other Groups MF=Major Flare

RELATIVE SUNSPOT NUMBERS

ZURICH, R_Z

	1976 FINAL									1977 PROVISIONAL		
DAY	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR
1	23	30	0	9	10	17	30	0	0	20	15	8
2	23	23	0	8	16	28	28	0	0	32	19	8
3	21	25	0	10	17	12	30	0	0	25	19	8
4	13	6	0	5	13	11	30	0	0	22	16	8
5	12	21	0	8	16	17	25	0	0	21	10	8
6	9	10	0	10	14	10	24	0	0	13	7	9
7	8	10	0	7	24	9	30	0	7	8	7	8
8	0	9	10	0	27	9	7	0	19	5	26	20
9	6	9	10	0	31	10	14	0	22	9	21	20
10	16	10	7	0	24	22	0	0	19	9	23	19
11	15	16	7	0	23	24	0	0	22	14	25	19
12	17	17	8	0	28	20	13	0	16	19	48	9
13	17	23	8	0	26	18	17	0	12	23	68	8
14	19	30	15	0	15	10	23	0	32	22	61	7
15	19	17	18	0	8	16	25	7	34	20	45	0
16	19	12	15	0	15	14	28	7	36	18	49	0
17	22	18	18	0	19	8	31	14	34	30	44	0
18	27	8	24	0	22	8	24	20	24	26	37	0
19	27	20	23	0	25	7	20	13	15	7	25	0
20	36	20	20	0	20	0	19	12	8	0	10	0
21	37	13	36	0	17	0	15	8	9	15	9	0
22	26	7	31	0	8	0	22	13	9	24	9	10
23	17	15	22	0	9	7	28	11	9	34	9	8
24	16	8	25	0	15	7	30	10	17	35	8	7
25	17	0	18	0	10	16	30	9	22	17	8	14
26	26	7	17	0	14	17	29	9	25	8	8	8
27	23	0	9	0	7	18	24	8	16	0	0	9
28	21	0	11	0	8	18	19	8	17	13	0	16
29	24	0	11	0	9	23	15	8	19	11		8
30	32	0	10	0	10	30	8	0	19	6		8
31		0		0	9		0		12	10		8
MEAN	18.8	12.4	12.2	1.9	16.4	13.5	20.6	5.2	15.3	15.7	22.6	8.8

1976 yearly mean = 12.6

DAILY SOLAR FLUX AT 2800 MHz
OTTAWA ARO

FLUX ADJUSTED TO 1 A.U., S_n

	1976									1977		
DAY	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR
1	79.6	77.6	68.4	69.3	75.9	76.3	74.6	78.9	70.2	73.8	81.7*	72.6
2	76.8	74.2	67.9	69.1	77.8	75.3	73.9	69.1	71.6	76.5	82.1	75.4
3	76.2	71.9	68.1	69.5	82.3	75.7	73.8	69.8	71.2	76.0	80.9	74.8
4	74.8	71.5	68.4	68.6	82.3	75.9	73.1	69.9	71.3	75.5	78.7	76.9
5	73.1	71.1	68.7	69.5	84.2	75.4	74.8	70.9	70.1	74.0	77.8	77.6
6	71.3	69.9	69.3	69.6	94.3	73.1	74.7	69.7	70.1	72.4	75.2	77.6
7	70.3	70.3	69.0	69.5	83.7	73.0	74.5	69.5	69.7	71.4	74.6	77.2
8	71.9	70.2	70.7	69.7	82.0	72.9	74.6	69.3	70.8	69.6	78.6	81.6
9	74.1	70.6	70.1	69.7	82.8	73.2	74.8	70.7	74.3	68.4	83.1	80.3
10	75.3	71.7	71.0	70.1	82.8	75.8	74.9	69.4	76.8	68.8	83.5	80.5
11	77.2	72.5	71.4	70.2	80.4	75.7	73.7	70.5	78.3	71.2	84.6	78.9
12	78.2	72.6	71.7	69.8	80.6	75.7	73.3	70.8	78.6	74.9	86.9*	78.6
13	79.7	73.6	72.0	69.8	78.7	74.3	72.6	69.4	78.1	77.5	88.5	77.9
14	79.6	74.2	73.7	70.7	73.4	74.7	74.4	69.2	81.0	74.5	85.2	77.2
15	79.3	75.9	74.3	71.4	72.8	73.9	75.5	71.1	79.8	75.6	84.4	74.8
16	80.7	79.2	77.1	69.8	72.9	75.8	77.0	71.1	77.8	77.5	85.7	74.1
17	80.5	75.5	77.1	69.4	77.8	76.5	78.0	72.8	75.5	76.1	89.6*	74.1
18	80.5	75.6*	77.9	70.6	78.2	74.3	77.3	75.6	73.8	75.4	86.5	73.9
19	79.8	73.8	76.9	70.2	76.1	73.3	76.6*	74.6*	72.9	76.9	82.8	74.0
20	80.1	73.8	76.9	69.4	74.5	72.2	75.8	72.9	71.7	75.2	81.1	72.3
21	78.1	74.0	77.7	70.1	73.2	70.9	73.5	73.2	71.8	74.0	78.6	72.8
22	76.2*	72.5	78.9	70.1	72.3	73.5	75.4	73.3	73.4	76.8	75.9	74.6
23	75.7	71.9	76.5	68.7	70.8	72.0	80.1	72.5	73.7	78.7	75.9	74.7
24	76.8	70.8	75.2	69.4	70.9	72.5	80.1	72.9	74.2	77.4	74.2	74.8
25	75.8	69.8	74.9	68.8	70.6	73.4	84.7	72.7	75.6	74.9	74.3	74.0
26	75.8	69.5	74.3	68.5	70.1	72.8	80.4	72.1	75.6	76.0	72.3	75.1
27	74.6	69.6	72.8	69.4	71.5	73.3	77.4	73.7	75.2	75.3	72.8	74.5
28	73.4	69.8	71.8	69.4	72.8	73.6	73.8	71.7	74.5	77.1	72.6	74.4
29	73.7	68.8	71.3	69.4	73.3	71.9	72.1	69.7	74.8	76.1		75.4
30	73.6*	69.1	70.3	70.7	73.3	72.6	72.1	69.7	75.1	76.3		74.6
31		68.7		72.3	73.8		70.4		76.4	79.6		74.1
MEAN	76.8	72.2	72.8	69.8	76.6	73.9	75.4	71.3	74.3	74.9	80.3	75.8

* adjusted for burst

DAILY SOLAR INDICES

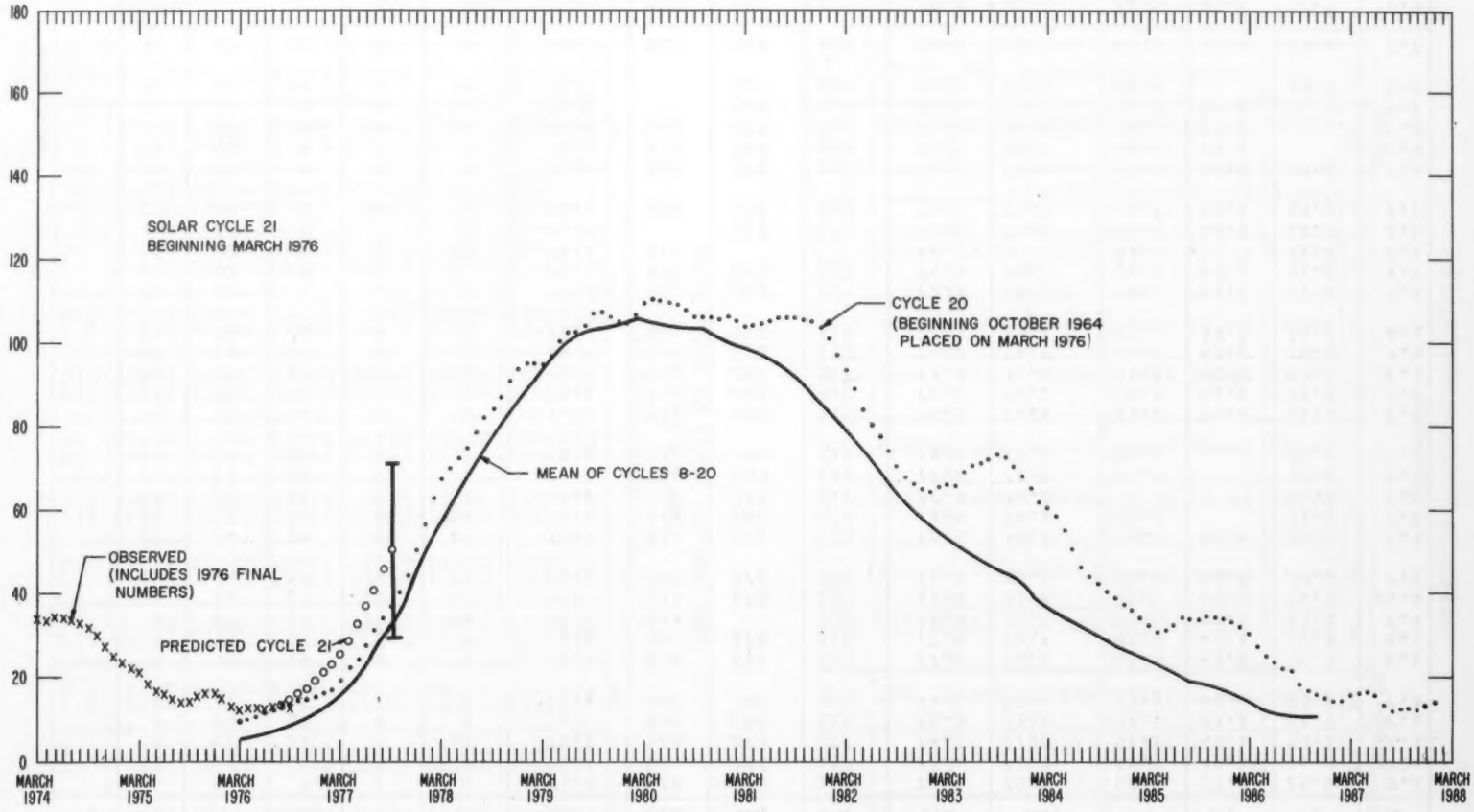
MARCH 1977

MAR 1977	YEAR DAY	BARTELS 27-DAY CYCLE NUMBER	SUNSPOT NUMBERS		OBSERVED FLUX	SOLAR FLUX ADJUSTED TO 1 A.U.								
			R_Z	$R_{A'}$	OTTAWA 2800	AFGL 15400	AFGL 8800	AFGL 4995	OTTAWA 2800	AFGL 2695	AFGL 1415	AFGL 606	AFGL 410	AFGL 245
1	60	9	0	0	73.9	528	270	115	72.6	75.3	52.4	37.5	25.5	8.0
2	61	10	8	9	76.7	526	273	117	75.4	76.9	51.5	39.3	21.3	7.8
3	62	11	8	10	76.1	528	273	117	74.8	77.7	50.1	40.1	20.1	7.3
4	63	12	8	9	78.2	526	270	119	76.9	78.6	54.5	41.1	18.5	7.1
5	64	13	8	9	78.9	533	265	120	77.6	79.0	53.2	42.4	23.1	7.8
6	65	14	9	9	78.8	518	275	121	77.6	78.5	55.3	40.8	24.3	8.1
7	66	15	8	9	78.4	516	270	118	77.2	78.7	54.9	40.1	22.8	6.1
8	67	16	20	20	82.8	533		123	81.6	84.0	56.4	42.1	23.3	7.8
9	68	17	20	21	81.4	537	275	120	80.3	81.7	55.1	40.3	25.9	14.8
10	69	18	19	20	81.6	528	272	122	80.5	81.1	55.2	42.0	22.4	7.5
11	70	19	19	19	79.9	531	271	120	78.9	78.7	54.5	42.4	24.0	7.3
12	71	20	9	14	79.6	524	265	118	78.6	76.0	51.1		21.6	7.7
13	72	21	8	9	78.8	517	267	117	77.9	78.0			24.8	7.4
14	73	22	7	3	78.1	524	269	119	77.2	78.9	54.9		25.8	8.1
15	74	23	0	0	75.6	537	265	115	74.8	75.2	51.1		22.9	7.6
16	75	24	0	0	74.8	532	259	116	74.1	74.4	50.0	38.6	21.5	7.2
17	76	25	0	1	74.8	530	263	112	74.1	74.0	50.6	41.6	20.5	7.2
18	77	25	0	0	74.6	521	265	113	73.9	75.4	47.8	41.3	23.7	8.1
19	78	27	0	0	74.6	526	272	113	74.0	74.8	50.5	43.2	25.6	8.1
20	79	1	0	0	72.9	528	269	112	72.3	75.7	49.0	39.5	24.5	8.1
21	80	2	0	0	73.3	520	262	114	72.8	73.9	49.1	41.4	21.8	7.8
22	81	3	10	11	75.1	521	271	116	74.6	76.7	51.0	40.0	21.6	8.1
23	82	4	8	10	75.2	515			74.7		50.9		21.4	7.8
24	83	5	7	5	75.3		272	116	74.8	76.9	50.9	40.3	18.4	8.1
25	84	6	14	6	74.4	523	270	113	74.0	74.7	48.7	38.5	18.4	7.7
26	85	7	8	9	75.4	521	271	116	75.1	77.4	49.3	38.9	19.1	7.6
27	86	8	9	7	74.8	517	269	114	74.5	75.3	48.2	38.1		7.8
28	87	9	16	14	74.6	514	273	116	74.4	74.6	51.1	39.4		7.9
29	88	10	8	16	75.6		268	115	75.4	73.7	49.3	37.9	23.9	7.7
30	89	11	8	4	74.7		269	116	74.6	73.7	50.8		23.7	7.8
31	90	12	8	4	74.2	517	262	113	74.1	73.1	49.8	38.2	23.1	7.7
MEAN			8.0	8.0	76.6	525	269	117	75.8	76.8	51.6	40.2	22.5	7.9

* Adjusted for burst.

Note: Data gaps in AFGL Sagamore Hill data are due to equipment problems.

7 Mar 77



PREDICTED AND OBSERVED SUNSPOT NUMBERS

SMOOTHED OBSERVED AND PREDICTED SUNSPOT NUMBERS
CYCLE 21

MONTH	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1976	15.2	13.2	12.2	12.6	12.5	12.2	12.9	13.9	14.1	15.4	16.8	18.8
										(1)	(2)	(4)
1977	21.0	22.9	25.6	28.8	32.7	37.0	40.8	44.2	47.6	51.8	56.5	61.6
	(5)	(7)	(9)	(11)	(14)	(16)	(18)	(22)	(26)	(30)	(33)	(36)
1978	66.7	72.5	77.6	81.3	84.3	86.9	90.4	95.6	101.7	106.8	111.7	116.1
	(40)	(44)	(47)	(51)	(54)	(58)	(59)	(59)	(62)	(64)	(65)	(67)
1979	119.4	121.8	124.9	128.8	132.0	133.6	134.0	133.7	132.7	130.7	129.3	128.9
	(69)	(70)	(74)	(77)	(78)	(80)	(81)	(82)	(82)	(80)	(78)	(75)
1980	129.2	129.1	127.8	126.1	124.1	122.9	122.5	121.7	121.7	123.2	122.8	120.1
	(75)	(75)	(72)	(69)	(67)	(65)	(65)	(65)	(65)	(66)	(66)	(64)
1981	116.9	114.9	114.0	114.5	115.8	116.6	116.1	114.6	111.9	108.1	104.8	102.7
	(62)	(61)	(58)	(56)	(54)	(53)	(52)	(49)	(47)	(45)	(43)	(42)
1982	101.3	99.5	96.2	91.3	85.9	82.2	77.4	74.0	70.5	67.2	65.4	64.5
	(40)	(38)	(37)	(36)	(34)	(31)	(28)	(26)	(25)	(24)	(23)	(23)
1983	63.5	62.0	60.0	59.2	59.1	58.5	57.8	57.3	56.8	55.7	53.5	50.4
	(23)	(22)	(23)	(23)	(24)	(25)	(27)	(28)	(28)	(28)	(27)	(27)
1984	47.0	44.6	43.6	42.0	39.6	37.9	36.5	35.3	34.2	33.1	32.0	31.1
	(28)	(29)	(30)	(31)	(31)	(30)	(29)	(28)	(27)	(27)	(26)	(26)
1985	30.6	29.6	28.2	27.1	26.4	26.0	25.5	24.5	24.1	24.7	24.8	24.4
	(26)	(25)	(24)	(23)	(22)	(22)	(22)	(23)	(23)	(23)	(22)	(21)
1986	23.4	22.2	21.1	19.9	18.9	18.1	17.6	17.3	16.6	16.0	15.8	15.9
	(20)	(19)	(18)	(17)	(16)	(15)	(14)	(12)	(11)	(10)	(10)	(10)
1987	16.4	17.4	18.3	19.2	20.2							
	(11)	(12)	(13)	(14)	(15)							

For each month, the upper figure is the observed or predicted Zürich smoothed sunspot number. The lower figure in parenthesis is the corresponding absolute value of the 90% prediction interval, an indication of the uncertainty above and below the predicted number. Observed numbers are those with no prediction intervals. The observed smoothed sunspot numbers are based on final Zürich numbers through 1976.

The predicted sunspot numbers are derived from a regression analysis based on cycles 8 through 20. Tests indicate that earlier cycles are from a different statistical population.

Hα SOLAR FLARES

MARCH 1977

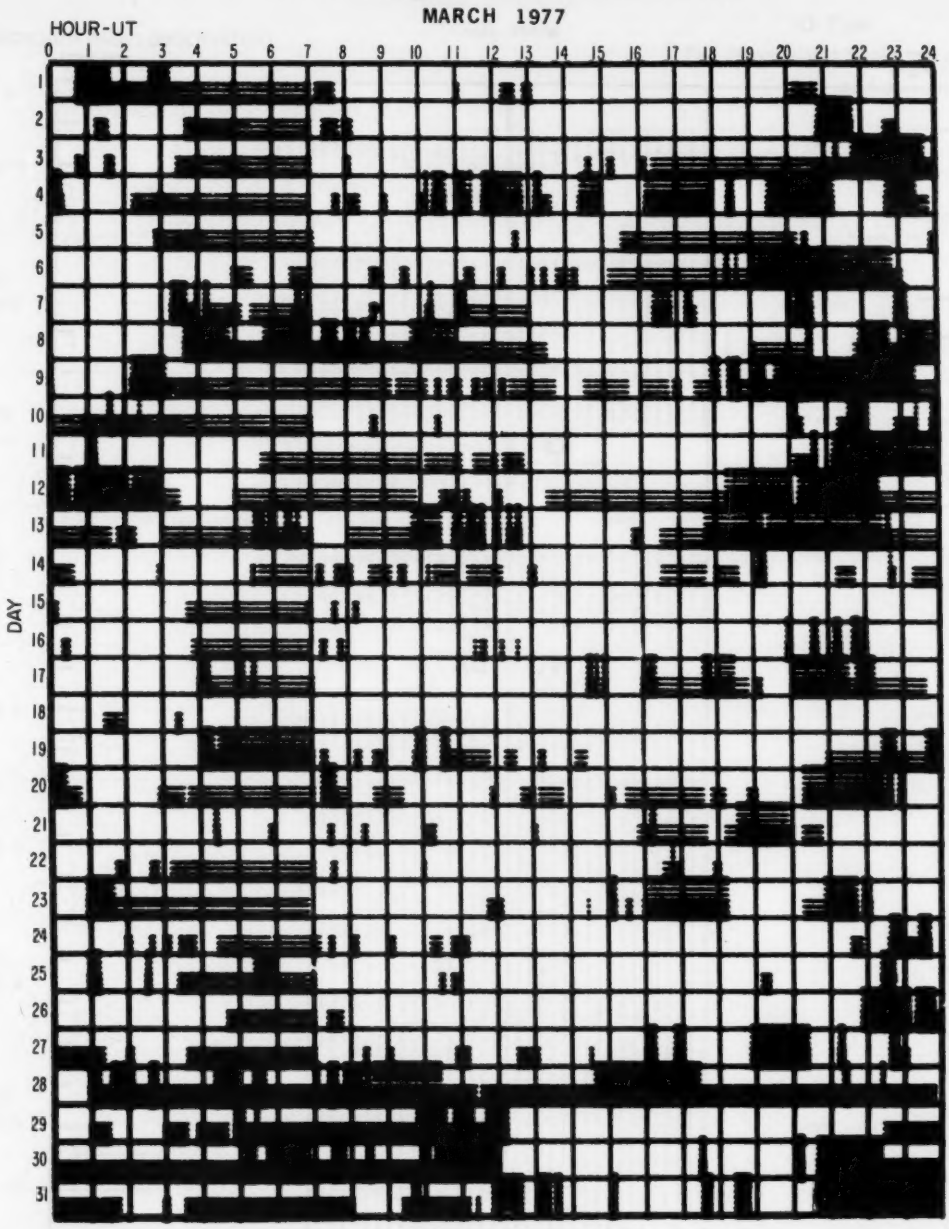
OBSERVATORY	OBSERVED UT				LOCATION					DURATION — MIN.	IMPORTANCE	OBS.		MEASUREMENTS			REMARKS
	DATE MAR	START	MAX. PHASE	END	APPROX. LAT.	APPROX. MER. DIST.	CENTRAL DISTANCE	MCMATH PLAGE REGION	CMP DAY			COORD.	TYPE	TIME — UT	MEAS. AREA Millionths of Disk	CORR. AREA Sq. Deg.	
MCMA	08	1411	1423	1458	N20	W00	.458	14674	8.6	47	SB		C	1423	120	1.4	E
MCMA	08	1852	1853	1857	N21	W14	.521	14674	7.7	5	SF		C	1853	25	.3	EH
CATA	09	1110E	1110	1125D	N21	W07	.486		8.9	150	SF	2		1110	56	.7	
MCMA	09	1707		1728	N22	W14	.534	14674	8.7	21	SB		C	1707	130	1.6	E
MITK	11	0127	0127	0130	N28	W90	1.002		4.3	3	SN		C	0127	50		D
MCMA	11	1750	1802	1822	N22	W37	.726	14674	9.0	32	SF		C	1802	60	.9	E

"Remarks":

A = Eruptive prominence whose base is less than 90° from central meridian.
B = Probably the end of a more important flare.
C = Invisible 10 minutes before.
D = Brilliant point.
E = Two or more brilliant points.
F = Several eruptive centers.
G = No visible spots in the neighborhood.
H = Flare accompanied by a high speed dark filament.
I = Active region very extended.
J = Distinct variations of plage intensity before or after the flare.
K = Several intensity maxima.
L = Existing filaments show signs of sudden activity.
M = White-light flare.
N = Continuous spectrum shows effects of polarization.
O = Observations have been made in the calcium II lines H and K.
P = Flare shows helium D_3 in emission.
Q = Flare shows the Balmer continuum in emission.
R = Marked asymmetry in Hα line suggests ejection of high velocity material.
S = Brightness follows disappearance of filament (same position).
T = Region active all day.
U = Two bright branches, parallel (||) or converging (Y).
V = Occurrence of an explosive phase: important and abrupt expansion in about a minute with or without important intensity increase.
W = Great increase in area after time of maximum intensity.
X = Unusually wide Hα line.
Y = System of loop-type prominences.
Z = Major sunspot umbra covered by flare.

INTERVALS OF NO FLARE PATROL OBSERVATION

FOR PRECEDING SOLAR FLARE TABLE



Observatories included in total patrol:

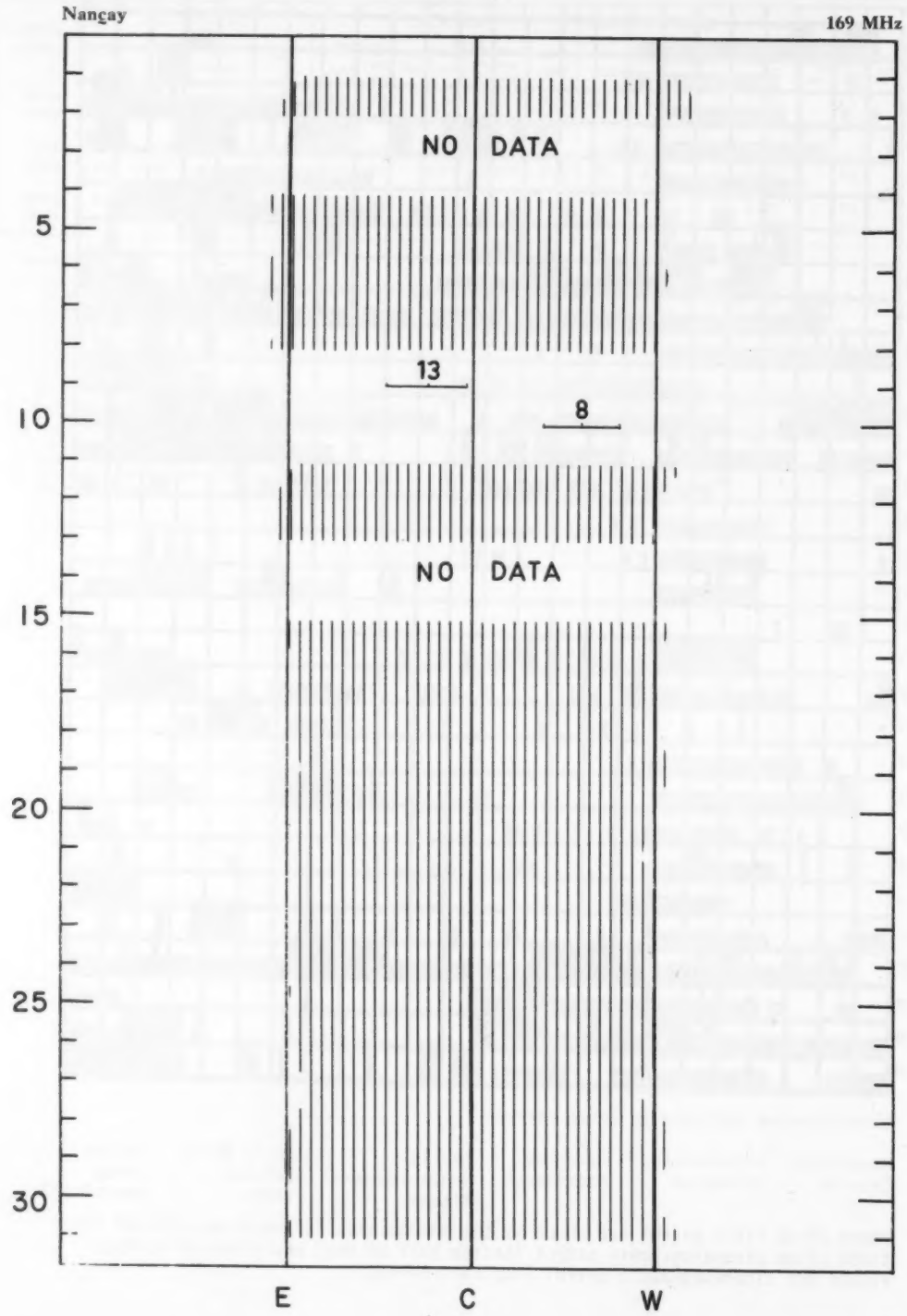
Bucharest	Herstmonceux	Istanboul	Manila	Monte Mario	Tehran
Catania	Hurbanovo	Kodaikanal	McMath-Hulbert	Palehua	Upice
			Mitaka	Ramey	Wendelstein

Times of no flare patrol are shown by the shaded area for each day divided into times of no cinematographic patrol (bottom half of day) and times of neither visual nor cinematographic patrol (top half of day).

12
Mar 77

SOLAR RADIO EMISSION
INTERFEROMETRIC OBSERVATION

MARCH 1977

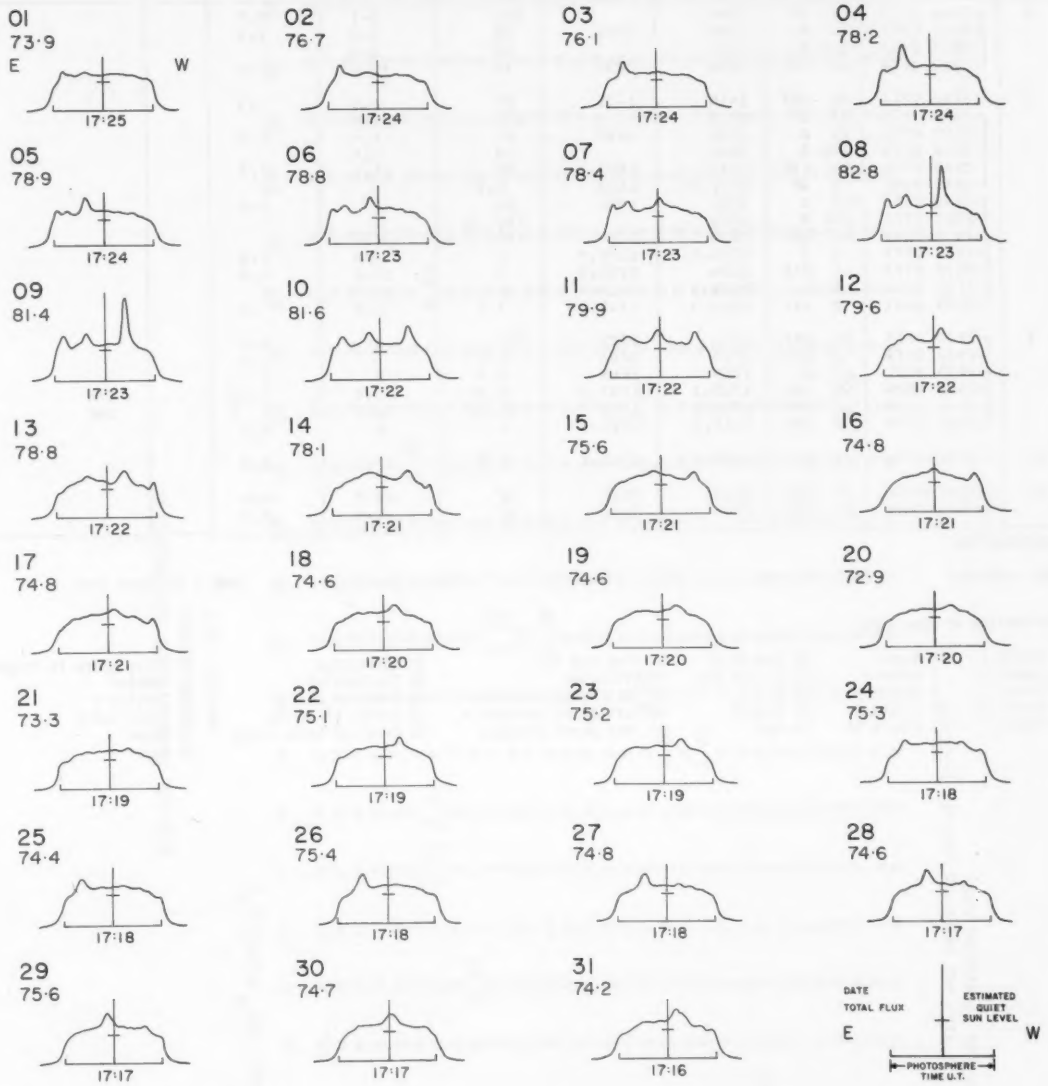


EAST-WEST SOLAR SCANS

MARCH 1977

ALGONQUIN RADIO OBSERVATORY
CANADA

10·7cm
Fan Beam with 1·5 minutes of arc
E-W Resolution



SOLAR RADIO EMISSION
SELECTED FIXED FREQUENCY EVENTS

MARCH 1977

	FREQUENCY	STATION	TYPE	STARTING TIME	TIME OF MAXIMUM	DURATION	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1}		INT	REMARKS
				UT	UT	MINUTES	PEAK	MEAN		
5	2800	OTTA	27 RF	1840		110	0.8	0.7		
	2800	OTTA	24 R	1840	1900	20	0.8	0.4		
	2800	OTTA	24P R	1900		80	0.8			
	2800	OTTA	26 FAL	2020	2030	10	-0.8	-0.4		
8	2800	OTTA	20 GRF	1415	1435	55	1.8	0.9		
	2800	OTTA	27 RF	1535		195	1.4	1		
	2800	OTTA	24 R	1535	1602	27	1.4	0.8		
	2800	OTTA	24P R	1602		73	1.4			
	2800	OTTA	26 FAL	1715	1850	95	-1.4	-0.7		
	2695	BOUL	2 SF	1842.5	1843	2.5	6	2		
	2800	OTTA	240 R	1905	1925	20	1	0.5		
	2800	OTTA	24P R	1925		150 D	1			
	2695	PENT	21 GRF	2150	2234	150 D	7.2			
	2800	OTTA	1 S	2220.6	2220.9	1	1.6	0.8		
	2800	OTTA	4 S/F	2224	2226.5	9	17.2	4.9		
	2695	BOUL	3 S	2226.5	2227.5	10	14	5		
	2695	MANI	2 S/F	2243.3	2245.2	3.7	2.6	.9		1
9	2800	OTTA	21 GRF	1704	1725	205	3	1.5		
	2800	OTTA	2 S/F	1705	1707	5.5	5	1.7		
	2695	BOUL	45 C	1705	1708	7.5	5	2		
	2695	SGMR	2 S/F	1705.1	1707.2	9.9U	6.3	3.8U	SWF	2
	8800	SGMR	22 GRF	1705.8	1710	24.2U	8.3	5 U	SWF	2
	2800	OTTA	2 S/F	1915.8	1916.5	2	1	0.5		
13	2800	OTTA	1 S	1909.5	1910.2	1.2	0.8	0.4		
23	2695	PENT	32 ABS	2010	2030	42	-0.8	-0.4		
	2800	OTTA	20 GRF	2045	2102	90	1.4	0.9		

Observatories:

BOUL = Boulder MANI = Manila OTTA = Ottawa ARO PENT = Penticton SGMR = Sagamore Hill

Explanation of Type Code:

1 Simple 1
2 Simple 1F
3 Simple 2
4 Simple 2F
5 Simple
6 Minor
7 Minor +
8 Spike
20 Simple 3
21 Simple 3A
22 Simple 3F
23 Simple 3AF
24 Rise
25 Rise A
26 Fall
27 Rise and Fall
28 Precursor
29 Post Burst Increase
30 Post Burst Increase A
31 Post Burst Decrease
32 Absorption
40 Fluctuation
41 Group of Bursts
42 Series of Bursts
43 Onset of Noise Storm
44 Noise Storm in Progress
45 Complex
46 Complex F
47 Great Burst
48 Major
49 Major +

SOLAR X-RAYS BY SATELLITE
SMS GOES
MARCH 1977

.5 - 4Å Hourly Averages (10^{-5} watts/m^2)

MO DA	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Mean
3/ 1	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
3/ 2	M	M	M	M	B	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
3/ 3	B	M	M	M	M	M	M	M	M	M	M	M	M	M	M	B	B	B	B	B	B	B	B	B	B
3/ 4	B	B	B	B	B	M	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
3/ 5	B	B	B	B	B	M	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
3/ 6	B	B	B	B	B	M	B	B	B	B	B	B	B	0.02	B	B	B	B	B	B	B	B	B	B	B
3/ 7	B	B	B	B	B	M	0.15	0.01	B	B	B	B	B	B	B	B	0.02	B	B	B	B	B	B	B	B
3/ 8	B	B	B	B	B	M	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
3/ 9	B	B	B	B	0.02	M	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
3/10	B	B	B	B	B	M	B	B	B	B	0.09	B	B	B	B	B	B	B	B	B	B	B	B	B	B
3/11	B	B	B	B	B	M	B	B	B	B	0.21	B	B	B	B	B	B	B	B	B	B	B	B	B	B
3/12	B	B	B	B	B	M	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
3/13	B	B	B	B	B	M	B	B	B	B	0.10	B	B	B	B	B	B	B	B	B	B	B	B	B	B
3/14	B	B	B	B	B	M	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
3/15	B	B	B	B	B	M	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
3/16	B	B	B	B	B	M	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
3/17	B	B	B	B	B	M	B	B	B	B	B	B	B	M	M	B	B	B	B	B	B	M	B	B	B
3/18	B	B	B	B	B	M	B	B	B	0.01	B	B	B	B	0.01	B	B	B	B	B	B	B	B	B	B
3/19	B	B	B	B	B	M	B	B	0.09	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
3/20	B	B	B	B	B	M	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
3/21	B	B	B	B	B	M	B	B	0.01	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
3/22	B	B	B	B	B	M	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
3/23	B	B	B	B	B	M	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
3/24	B	B	0.02	B	B	M	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
3/25	B	B	B	B	B	M	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
3/26	B	B	B	B	B	M	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
3/27	B	B	B	B	B	M	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
3/28	B	B	B	B	B	M	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
3/29	B	B	B	B	B	M	B	B	B	B	B	B	B	B	0.03	B	B	B	B	B	M	B	B	B	B
3/30	B	B	B	B	B	B	B	B	B	M	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
3/31	B	B	B	B	B	M	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B

Note: "B" indicates the flux was below the cut-off levels.
"M" denotes periods of missing data.

SOLAR X-RAYS BY SATELLITE
SMS GOES
MARCH 1977

1 - 8Å Hourly Averages (10^{-4} watts/m^2)

MO	DA	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Mean
3/	1	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
3/	2	M	M	M	M	B	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	B
3/	3	B	M	M	M	M	M	M	M	M	M	M	M	M	M	M	B	B	B	B	B	B	B	0.01	B	B
3/	4	B	B	B	B	B	M	B	B	B	B	B	B	B	B	0.03	B	B	0.02	B	B	B	B	B	B	B
3/	5	B	B	B	B	B	M	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
3/	6	B	B	B	B	B	M	B	B	B	B	B	B	B	0.01	B	B	B	B	B	B	B	B	B	B	B
3/	7	B	B	B	B	B	M	0.10	B	B	B	B	B	B	B	B	B	0.02	B	B	B	B	B	B	B	B
3/	8	B	B	B	B	B	M	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	0.01	B	B
3/	9	B	B	B	B	0.01	M	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
3/10		B	B	B	B	B	M	B	B	B	B	B	B	B	B	B	B	B	B	0.02	B	B	B	B	B	B
3/11		B	B	B	B	B	M	B	B	B	B	0.12	B	B	B	B	B	B	B	B	0.01	B	B	B	B	B
3/12		B	B	B	B	B	M	B	B	B	0.02	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
3/13		B	B	B	B	B	M	B	B	B	B	0.08	B	B	B	B	B	B	0.02	B	B	B	B	B	B	B
3/14		B	B	B	B	B	M	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
3/15		B	B	B	B	B	M	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
3/16		B	B	B	B	B	M	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
3/17		B	B	B	B	B	M	B	B	B	B	B	B	B	M	M	B	B	B	B	B	B	M	B	B	B
3/18		B	B	B	B	B	M	B	B	B	B	B	0.02	B	B	B	B	B	B	B	B	B	B	B	B	B
3/19		B	B	B	B	B	M	B	B	0.03	B	B	B	B	B	0.02	B	B	B	B	B	B	B	B	B	B
3/20		0.02	B	B	B	B	M	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
3/21		B	B	B	B	B	M	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
3/22		B	B	B	B	B	M	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
3/23		B	B	B	B	B	M	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
3/24		B	B	B	B	B	M	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
3/25		B	B	B	B	B	M	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
3/26		B	B	B	B	B	M	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
3/27		B	B	B	B	B	M	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
3/28		B	B	B	B	B	M	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
3/29		B	B	B	B	B	M	B	B	B	B	B	B	B	B	0.03	B	B	B	B	0.02	M	B	B	B	B
3/30		B	B	B	B	B	B	B	B	B	M	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
3/31		B	B	B	B	B	M	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B

Note: "B" indicates the flux was below the cut-off levels.
"M" denotes periods of missing data.

SOLAR X-RAYS BY SATELLITE

GOES-1

MARCH 1977

DAY	BEGIN TIME	.5-4A Wm^{-2}	.5-8A Wm^{-2}	MAX TIME	.5-4A Wm^{-2}	1-8A Wm^{-2}	1/2P TIME	.5-4A Wm^{-2}	1-8A Wm^{-2}
1	0448	0.0E+00	4.1E-05	0451	4.8E-03	1.4E-03	0453	2.9E-07	5.9E-06
2	0323	0.0E+00	2.7E-05	0345	1.9E-04	2.6E-03	0402	7.0E-05	1.3E-03
8	2219	2.6E-05	4.9E-04	2238	1.7E-04	2.5E-03	2252	5.8E-05	1.4E-03

CORONAL HOLES

Helium D3 Chromosphere at Solar Limb

MARCH 1977

Big Bear Solar Observatory

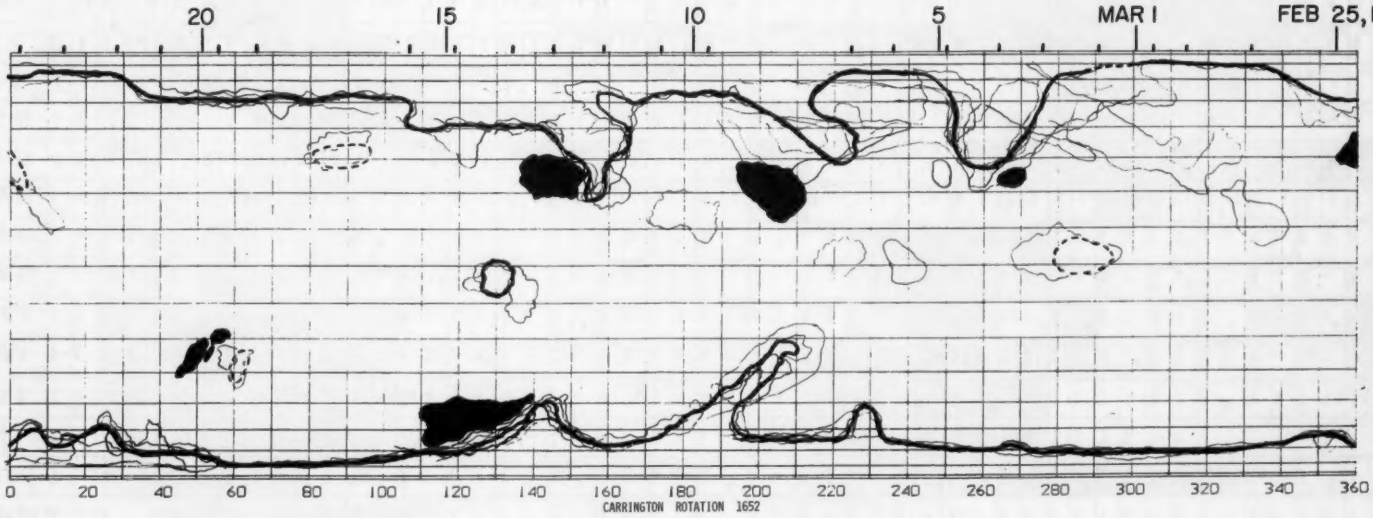
We made only two D3 limb observations during March, because of substantial periods of equipment maintenance, and also poor weather. The results we obtained were:

Date:	Position angles of coronal hole boundaries (degrees):			
	North		South	
March 12	32	-4	154	-138
March 22	30	-18	167	-153

HELIUM 10830Å SYNOPTIC MAPS

CARRINGTON ROTATION 1652

KITT PEAK NATIONAL OBSERVATORY



19 Mar 77

INFERRED IP MAGNETIC FIELD

BARTELS ROTATION	DATE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
1943	AUG 31	A A A A	TA A*	T T A A	A A TA	A T T*	A A A A	A A A *	A A A A*	A A*	A T	T T T T	T T T –	T TA	T T T T	T T T T	T A T A	A T A A										
1944	SEP 27	A A T A	A A A A	T T T A	T – A –	A – A A	A* A A A	A * AT	A T T A	A A A AT	* T A T	T T A T	T T A A	T T T T	T T T T	T T T TA	A A –											
1945	OCT 24	T T T T	T T T T	T TA A A	* A A A	A A A A	A A A*	A * A A	* AT – AT	– AT T AT	T T T T	T T T T	T T T T	T T A T	* T T T	T T T T	T T T TA											
1946	NOV 20	A T A *	T T TA T	T A A T*	A T* A A	A – A –	A A A *	A * A A	A A A A	A AT A AT	T T T T	T T T T	T T T T	T * T T	T T T T	T T T T	T T T T											
1947	DEC 17	T – T T	T T T T	T T T T	TA * A T	A T A T	A * AT *	TA A A A	* A A A	A A A A	A T T* T	A T * T	* T T T	T T T T	T T T T	T T T T	T T T T											
1948	1976 JAN 13	TA T T	T* T TA T	T TA A TA	T AT T A	A T A –	A * A A	A – T T	T T T T	T T T T	T T T T	T T T T	T T T T	T T T T	T T T T	T T T T	T T T T											
1949	FEB 9	T A T A	T T T –	T – A T	T – TA A	T A AT A*	T T A TA	A A A A	A A A T	A A A T	A T T T	T T T* T	A T T T	T T T T	T T T T	T T T T	T T T T											
1950	MAR 7	T A T A	T T T T	T T T T	T – T TA	A A* A A	TA A A A	A A A A	A A A A	A A A *	T * T AT	T T T T	T T T T	T T* T T	T T T T	T T T T	T – TA T											
1951	APR 3	T T T T	T T T T	T T T T	T * A A	A A A A	A * A A	A A A A	A A A A	A A A A	A A A AT	A TA T* A	T* T T T	T T T T	* AT T TA	A* T T T	T T T T											
1952	APR 30	T T AT T	T T T T	T T T T	TA A AT T*	A A A –	A A A A	A A – A	– A – A	– T T A	A A A* A	TA AT AT T	T T T A	A A* T T	A A T A	T T A A	A T A T											
1953	MAY 27	T – T T	T T T T	T T T T	T * TA T	A A A A	A A A A	A T A T	A – T *	A A A A	– T T A	T T T A	A T T A	A T T* A	A T T T	T T T T	T T T T											
1954	JUN 23	T T T T	T T T T	T T T AT	A T T A	A AT A A	A TA T* AT	A A A A	A A A TA	A* A A A	A A A A	A A A A	A TA AT A	T T A A	A A A A	A A A A	A A A A											
1955	JUL 20	T A A T*	T T A A	A A A A	A A A A	A A A A	A A TA A*	T T A A	A A A A	A T T A	A A A A	A T T A	T* TA TA TA	– TA TA A	A T T T	T A A A	A T T A											
1956	AUG 16	A A T T	T T T T	A A A A	A TA T* A	A A A A	A A A A	A A A A	A A A A	A A A A	A A A A	A A A A	A A A A	A * A A	AT A A A	A A A A	A – AT –											
1957	SEP 12	A – T –	AT – A –	T – T –	A – A –	A – A –	A – AT –	A – AT –	AT – T –	AT – T –	T – A –	A – A A	A A AT A	A A A –	T A T A													
1958	OCT 9	AT A T A*	T A T A*	T A T *	A A A A	A TA A T	A* A A T	A * A –	T – T –	* T A T	TA T AT A	AT A A A	– A A A	AT A T A														
1959	NOV 5	T AT TA T	T T T T	T TA A A	A T* A T	A * AT *	A A A –	A A A *	T – T T	T T T T	T T T T	A A A A	A A A A	* A A A														
1960	DEC 2	T A T A	T T T A	T A T T	TA T A T	A * A A	A A A T	A T A A	AT T T T	* T T T	A T A –	* A A A	A A A –	A A A –														
1961	DEC 29	A – AT –	T * T *	T * T T	T AT A A	A A A T	A T * T	A T T T	* T A* T	T T * T	* T T T	A * A A	A A A A	A A A A														
1962	1977 JAN 25	T A T A	A – A A	T T A –	A – TA –	A A A A*	T A T T	AT – A T	T T T *	– T T T	T A T *	T – T T	T T T TA	T A T A														
1963	FEB 21	AT T A –	T – T –	TA A A A	TA A T T	A A A *	A A A A	T T A T	T T T T	T T T T	T – T T	A T T –	T T T A	A A A A														
1964	MAR 20	T T T TA	T T AT A	T T T T	T A A T	T T T *	A A A A	A –																				

T = towards the sun A = away from the sun * = effect doubtful or not discernible - = missing data

The table shows daily inferences of the polarity of the interplanetary magnetic field. The first half of the day is based principally on magnetograms produced by the magnetometer at the Vostok Antarctic Station of the USSR. The magnetometer of the U.S. Air Weather Service now operated at Thule by the Danish Meteorological Institute is used for the second half of the day.

Note: The Bartels Rotation numbers after Rotation number 1955 were incorrect in this Table in SGD issues 385 Part I through 389 Part I.

Note: Thule data for December 5, 6, 10, 11, 18 and 19, 1976 have been corrected.

for the second half of the day.

Note: The Bartels Rotation numbers after Rotation number 1955 were incorrect in this Table in SGD issues 385 Part I through 389 Part I.

~~Erratum: This data for December 5, 6, 10, 11, 12 and 13, 1976 have been corrected.~~

STANFORD MEAN SOLAR MAGNETIC FIELD

BARTELS ROTATION	DATE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
1945	OCT 19	■	■	■	■	▥	□	□		□	□	□	□	□	□	□	□	□	▥	□	▥	■	■	□	□	▥	▥	▥
1946	NOV 15	■	■	▥	□	□	■	□	□	□	□	□	□	□	□	□	□	□	▥	■	□	■	■	■	▥	□		□
1947	DEC 12	■	■	■	■	■	■	□	□	□	□	□	□	□		□	■	■	▥	■	■	■	■		□		□	□
1948	1976 JAN 8	■	■	■	■	■	■	■	□	□	□	□	□	□	□	□	□	▥	■	■	■	■	□	▥	■	▥	□	■
1949	FEB 4	■		■	■		■	▥	□	□		□	□		□	□	□	□	■	■			■	■	▥	□		
1950	MAR 2					□	▥				□	□	□	□	□				■	■	■	■			□	□	□	□
1951	MAR 29	▥	▥	■	■	■					□	□	□		□	□	□	□	▥	■	■	■	■	■	□	□	□	□
1952	APR 25	□	■	□	■	■	■	■	□	□	□	□	□	□	□	□	□	▥	■	■		■	▥	■	□	□	□	□
1953	MAY 22	■	■	■	■	■	■	▥	□	□	□	□	□	□	□	□	□	▥			■	■	▥	■	□	□	□	□
1954	JUN 18	▥	■		■	■	■	□	□	□	□	□	□	□	□	□	□	□	□	▥	▥	▥	□	□	□	□	□	□
1955	JUL 15	□	□	□	▥	▥	□	□	□	□	□	□	□	□	□	□	□	□	□	□	▥	■	■	■	■	■	■	■
1956	AUG 11	▥	▥	▥	▥	□	□				□	□	□	□	□	□	□	□	□	□	□	▥	□	□	□	□	□	□
1957	SEP 7	□	▥	▥		▥	□	□	□	□	□	□	□	□	□	□	■	■	■	■					□			▥
1958	OCT 4	▥	□	■	▥	▥	□	□	□	□	□	□	□	□	□	□	▥	■	■	▥	□	□	□	□	□	□	□	□
1959	OCT 31	■	■	■	■	▥	▥	□	□	□	□	□		□		□	▥	■	■		▥		□	□	□	□	■	▥
1960	NOV 27	■	■	■	■	■	■	□	□	□	□	□	□	□	□	■	■	■	▥	▥	▥	□	□	□	□	□	▥	■
1961	DEC 24	■	■	■	■	■	■		□			▥	□		□	■	■	■	■	■			□	□	□	□	□	▥
1962	1977 JAN 20	■		■	■	■	■	■	▥	□	□	□	□	□	▥	■	■	■	■	■				□	□	□	□	□
1963	FEB 16	■	■	■	■			□	□	□	□	□	□	□	□	▥	▥	■	■	■	■	■	■	■	□	□	□	□
1964	MAR 15		■	■	■	■	■	■	□		□	□	□	□	□	□	□	□										

POLARITY OF THE MEAN SOLAR MAGNETIC FIELD: □ = FIELD >2μT, ▥ = -2μT ≤FIELD ≤2μT, ■ = FIELD <-2μT

Note: Data are taken daily at 2000 UT.

STANFORD MEAN SOLAR MAGNETIC FIELD (MICROTESLA)

22 Mar 77

	1976									1977		
DAY	APRIL	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MARCH
01	-4	-15	20	17	8	5	.	-2	-4	.	5	2
02	-10	3	21	19	6	6	.	-3	-2	.	0	0
03	.	13	15	15	0	2	-1	-4	5	4	-6	-2
04	.	17	16	14	-8	8	1	1	13	15	-8	-9
05	.	13	6	7	-14	7	7	1	21	.	-11	-17
06	.	22	8	-1	-10	6	-5	7	23	3	-17	-22
07	10	20	0	-1	-5	3	0	16	25	-7	-12	-20
08	15	18	.	1	-4	-2	2	25	18	-14	.	-13
09	21	12	.	3	-3	1	6	23	13	-9	.	-9
10	.	8	-5	6	-5	.	13	12	8	-11	.	-3
11	20	0	-3	6	2	0	19	.	-3	-8	21	3
12	20	-8	0	10	-1	2	21	9	-4	.	19	11
13	19	-7	-6	9	1	8	24	.	-7	.	13	18
14	9	-7	1	8	-2	12	29	4	-1	8	11	3
15	-2	-5	13	8	4	17	22	-2	0	6	9	.
16	-10	-2	16	5	7	20	19	-4	0	9	-3	-9
17	-14	-2	8	4	.	30	14	-3	6	6	-12	-12
18	-18	0	0	1	.	20	5	.	3	3	-13	-13
19	-15	11	-6	0	.	15	-1	0	8	0	-20	-15
20	-9	13	.	4	24	11	-9	.	6	-4	.	-12
21	-3	6	-13	7	33	5	-5	11	5	.	.	-7
22	10	-10	-7	14	33	-3	-1	9	1	-14	3	2
23	22	-18	-4	23	25	-12	6	2	-10	-12	7	.
24	22	-16	4	26	19	-10	12	5	-10	-12	12	15
25	3	-19	13	27	18	-6	14	-5	-14	-7	13	13
26	-8	-18	28	30	16	.	20	0	-16	-6	11	13
27	21	-10	26	24	11	.	8	-6	-16	0	9	10
28	-12	0	27	13	6	.	9	-5	-10	6	5	8
29	-24	6	23	20	6	.	9	-12	-5	8		4
30	-17	16	25	15	8	4	4	-8	.	7		7
31		17		12	1		-4		11	7		6

SOLAR WIND

Interplanetary Scintillations

MARCH 1977

UCSD 74 MHZ SCINTILLATIONS

DAY	3C48		3C144		3C147		3C161		3C237		3C273		3C298		3C459	
	VEL	ERR	VEL	ERR	VEL	ERR	VEL	ERR	VEL	ERR	VEL	ERR	VEL	ERR	VEL	ERR
1			323	15			402	27								
2			305	75	277	68					306	65				
3	349	5	284	0									311	41		
4	409	39			417	89	434	106								
5	393	36	222	5												
6	476	*	263	44			393	13								
7	388	24	311	10			458	10								
8	453	34	362	4	369	7										
9			312	20												
10	523	20	375	41												
11	443	*	311	48			370	*								
12	451	60	350	46												
13	405	3	401	0	250	22										
14	500	3	237	15												
15	598	36	312	36												
16	389	4	310	5	252	47	541	113					405	38		
17	386	64											247	10		
18	483	3	355	0												
19	350	5	271	1	365	53			512	111						
20	387	10	307	6			371	2					441	0		
21	398	6	304	5									406	2		
22	416	2	314	5	313	25	313	29								
23	515	12	340	0												
24	434	1														
25	504	26	294	2	279	6	413	32								
26	440	5	253	7	275	43										
27			313	6	288	18							479	10		
28	408	5	255	0					380	54						
29	526	21	306	6			553	62					481	70		
30	554	*	324	4	278	0	438	44								
31	418	88														

MARCH	5				15				25			
	UT	LAT	DIST	DLON	UT	LAT	DIST	DLON	UT	LAT	DIST	DLON
3C48	23.	10.	0.79	-33.	22.	15.	0.69	-40.	21.	23.	0.58	-46.
3C144	3.	-7.	1.08	-16.	2.	-7.	1.04	-17.	1.	-7.	0.98	-18.
3C147	2.	0.	1.09	-14.	1.	0.	1.05	-15.	0.	0.	1.00	-16.
3C161	4.	-14.	1.13	-13.	3.	-14.	1.09	-14.	3.	-15.	1.05	-15.
3C237	8.	-8.	1.29	-3.	7.	-8.	1.28	-6.	6.	-7.	1.26	-8.
3C273	10.	-6.	1.29	5.	9.	-5.	1.30	2.	8.	-5.	1.30	-0.
3C298	11.	-2.	1.22	9.	11.	-2.	1.25	7.	10.	-2.	1.27	5.
3C459	20.	50.	0.17	-65.	19.	59.	0.16	58.	19.	28.	0.28	67.

* indicates data for which no error estimate is available since only two antennas were operating

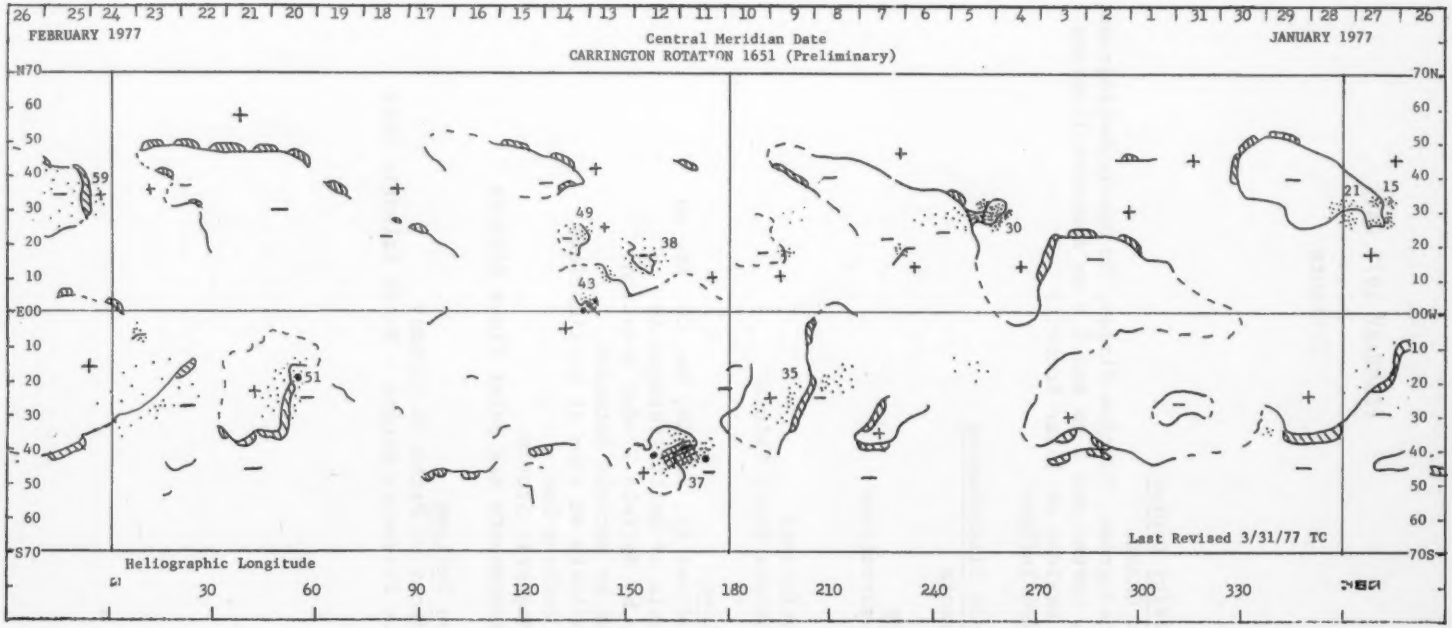
FEBRUARY 1977 DATA

Contents

	Page
Daily Solar Activity Center	
Hα Synoptic Chart	26-27
X-ray, Magnetograms, Calcium Plages, Hα Spectroheliograms, Sunspots, Corona and 2 cm and 8.6 mm Spectroheliograms	28-83
Individual Regions of Solar Activity	84-88
Daily Calcium Indices	88
Sudden Ionospheric Disturbances	
Table of Events	89
Solar Radio Waves	
Spectral Observations	90-93
Cosmic Rays	
Chart of Variations	94-95
Neutron Monitors Daily Values	96
Geomagnetic Indices	
Table of Indices Kp, Kn, Ks, Km, Cp, Ap, aa	97
12-Month Table of Daily Averages Ap	98
Chart of Kp by Bartels 27-day Rotation	99
Chart of Dst by Bartels Rotation (not available at time of publication)	
Equatorial Indices Dst	100
Principal Magnetic Storms	101
Sudden Commencements and Solar Flare Effects	102
Radio Propagation Indices	
Quality Indices on Paths to Germany	103
Transmission Frequency Ranges - North Atlantic Path	104-105

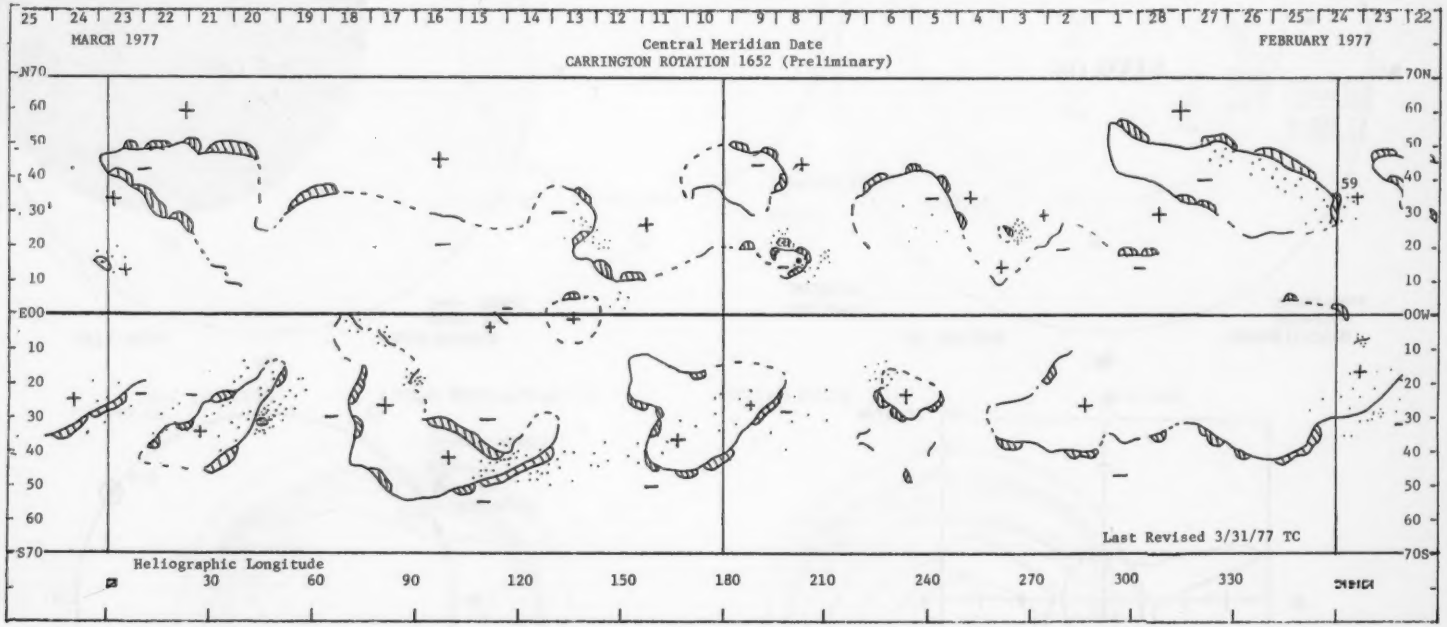
Hα SYNOPTIC CHART

CARRINGTON ROTATION 1651 (PRELIMINARY)



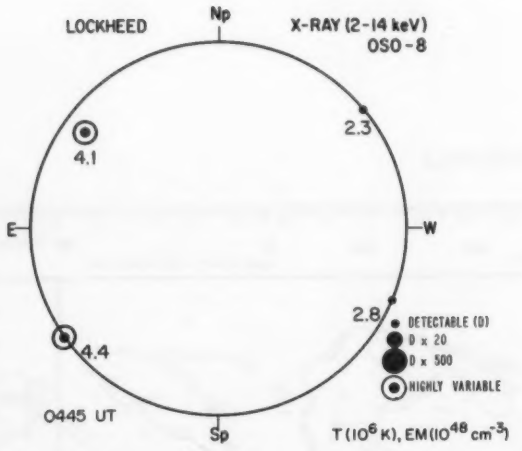
Hα SYNOPTIC CHART

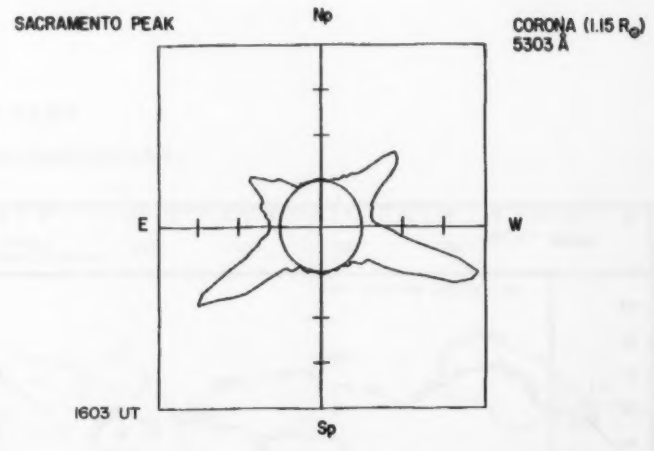
CARRINGTON ROTATION 1652 (PRELIMINARY)

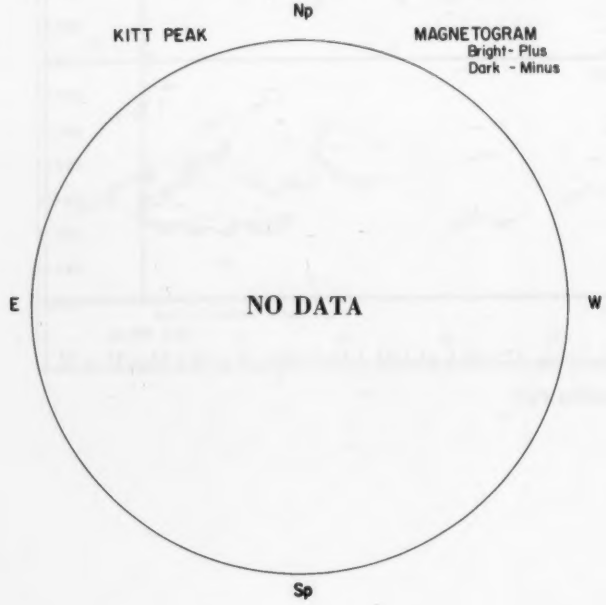


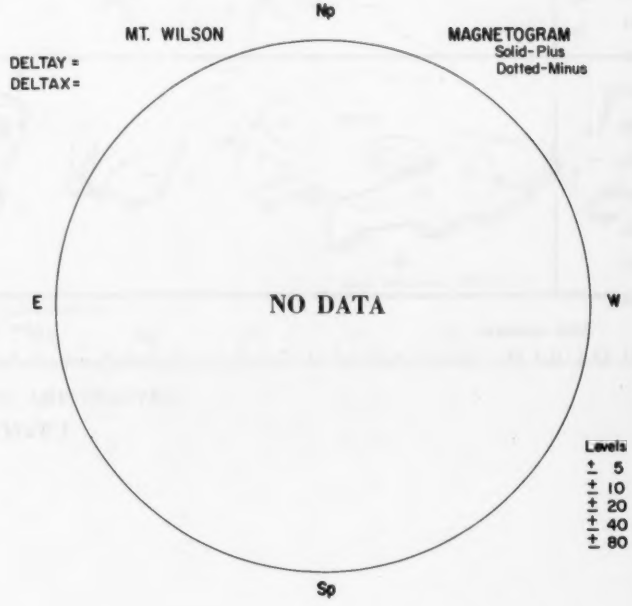
27 Feb 77

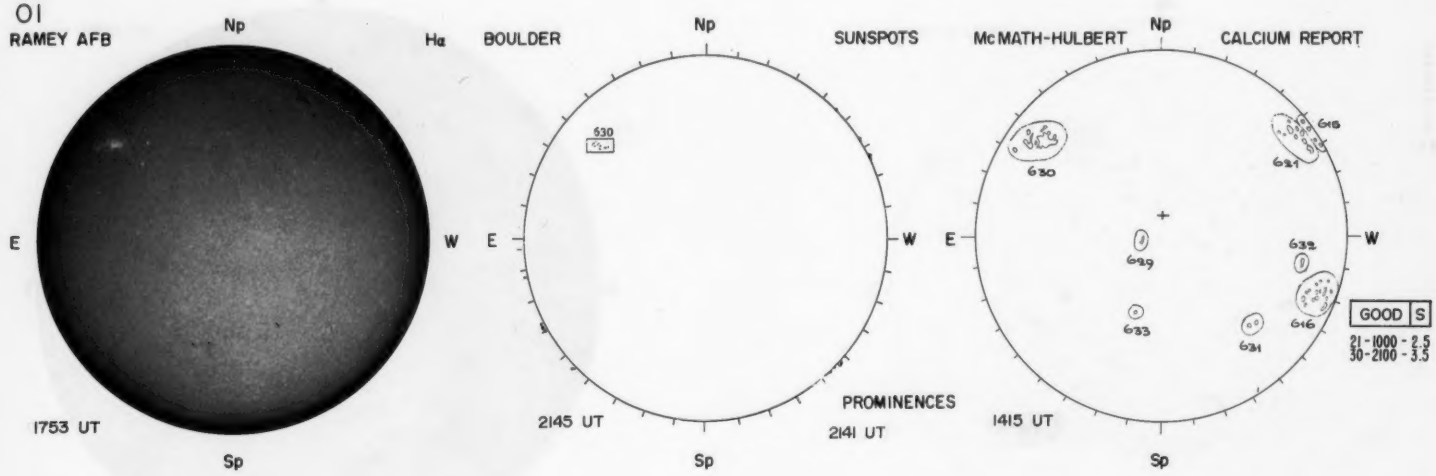
FEBRUARY 1, 1977 (P = -12.18, B_o = -6.05, L_o = 309.69)

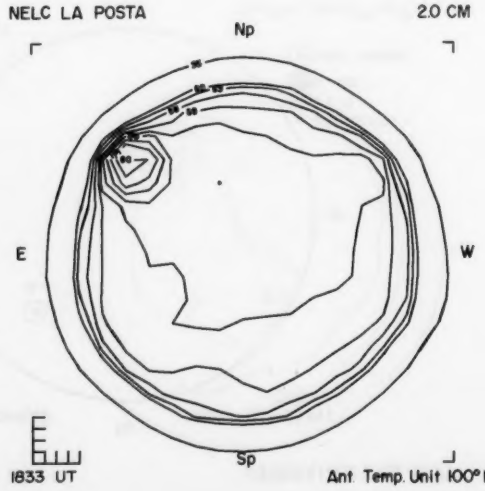


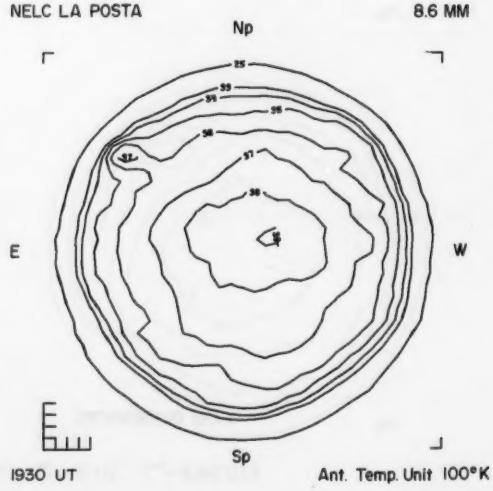






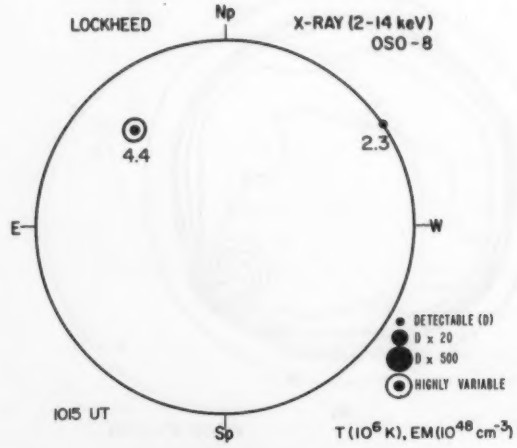

01
RAMEY AFB
Np
Hα
E
W
1753 UT
Sp
BOULDER
SUNSPOTS
630
2145 UT
PROMINENCES
2141 UT
McMATH-HULBERT
CALCIUM REPORT
630
621
616
629
632
633
631
616
GOOD | S
21-1000 - 2.5
30-2100 - 3.5
1415 UT


NELC LA POSTA
2.0 CM
Np
E
W
Sp
1833 UT
Ant. Temp. Unit 100°K


NELC LA POSTA
8.6 MM
Np
E
W
Sp
1930 UT
Ant. Temp. Unit 100°K

FEBRUARY 2, 1977 (P = -12.58, B_0 = -6.12, L_0 = 296.52)

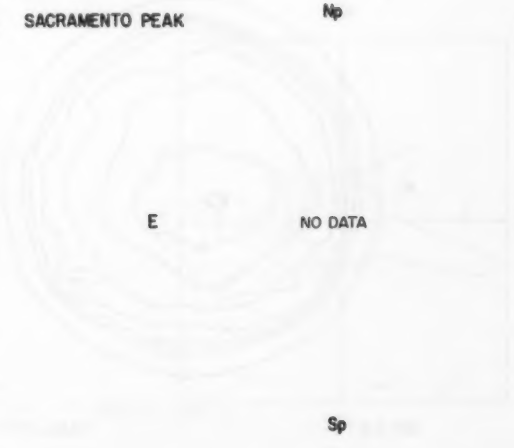
LOCKHEED
X-RAY (2-14 keV)
OSO-8



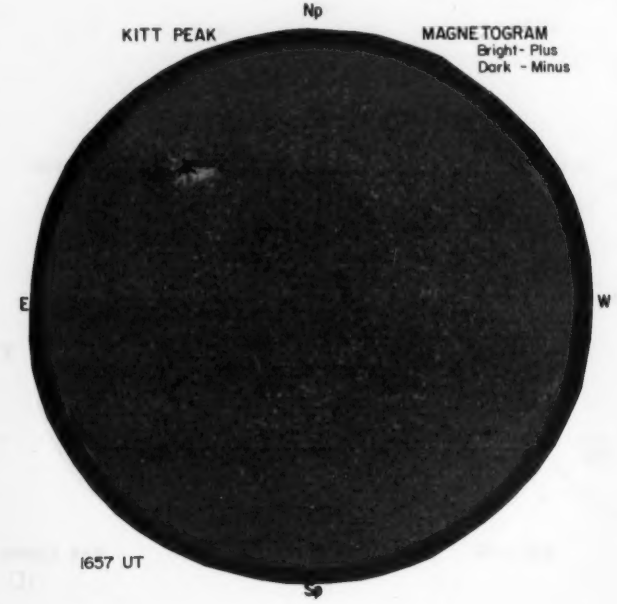
1015 UT

T (10^6 K), EM (10^{48} cm^{-3})

SACRAMENTO PEAK
CORONA (1.15 $R_\odot$)
5303 Å

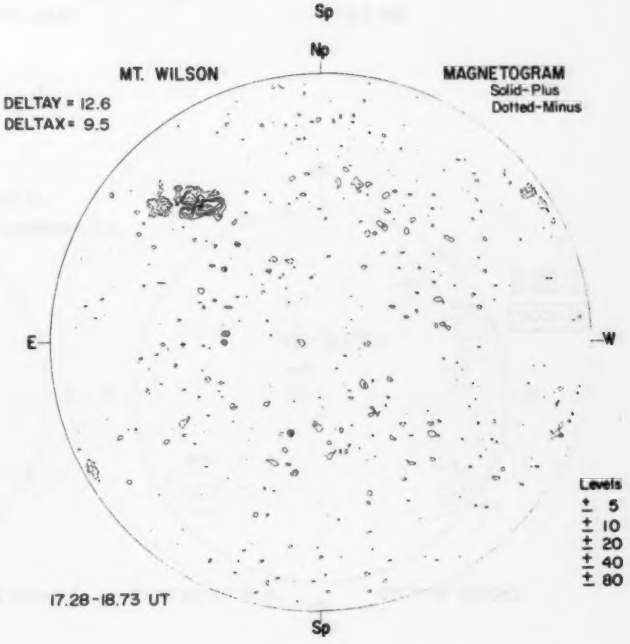


KITT PEAK
MAGNETOGRAM
Bright - Plus
Dark - Minus



1657 UT

MT. WILSON
MAGNETOGRAM
Solid - Plus
Dotted - Minus
DELTAY = 12.6
DELTAX = 9.5

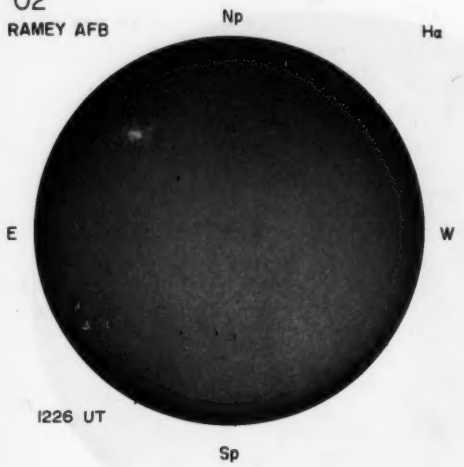


17.28-18.73 UT

Sp

02

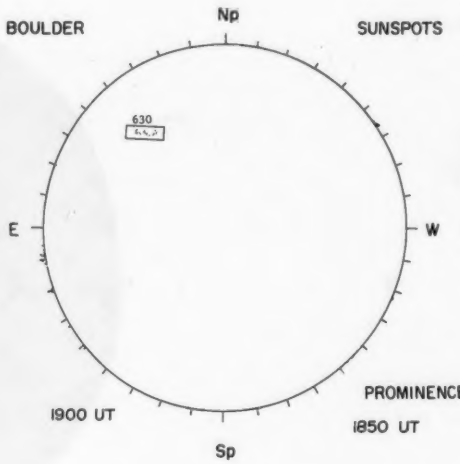
RAMEY AFB



1226 UT

Hα

BOULDER



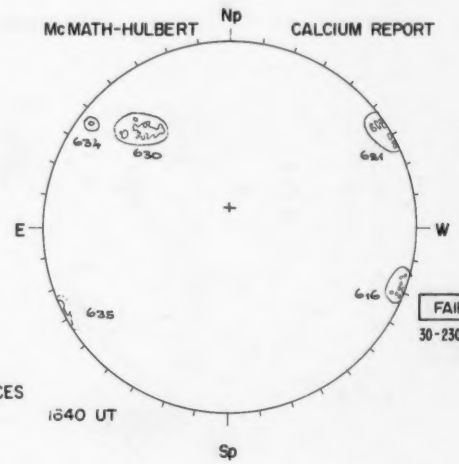
1900 UT

SUNSPOTS

PROMINENCES

1850 UT

McMATH-HULBERT



1840 UT

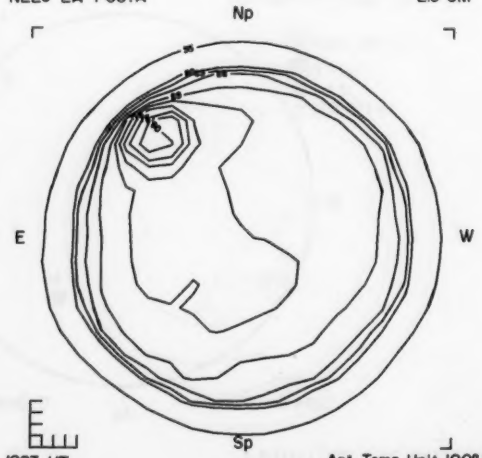
CALCIUM REPORT

FAIR | M

30-2300-3.5

NELC LA POSTA

2.0 CM

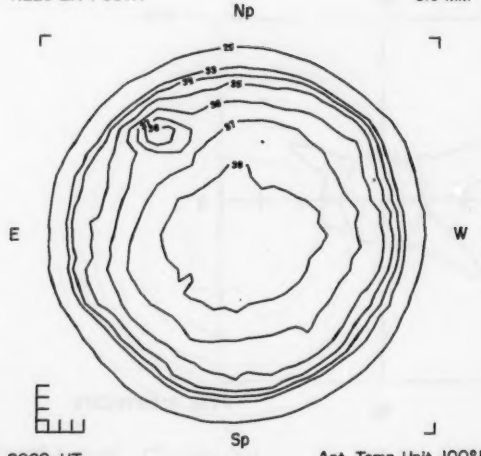


1923 UT

Ant. Temp. Unit 100°K

NELC LA POSTA

8.6 MM



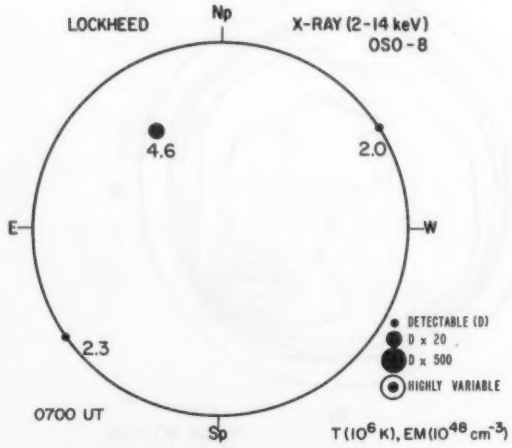
2009 UT

Ant. Temp. Unit 100°K

31
Feb 77

FEBRUARY 3, 1977 (P = -12.98, B_o = -6.18, L_o = 283.36)

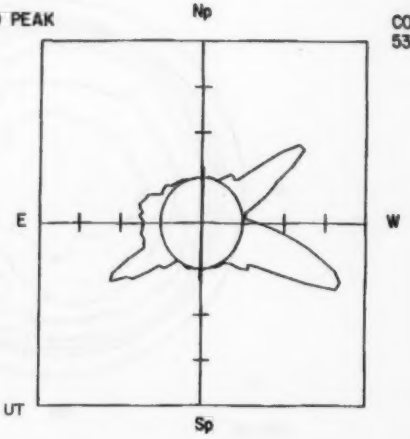
LOCKHEED
X-RAY (2-14 keV)
OSO-8



0700 UT

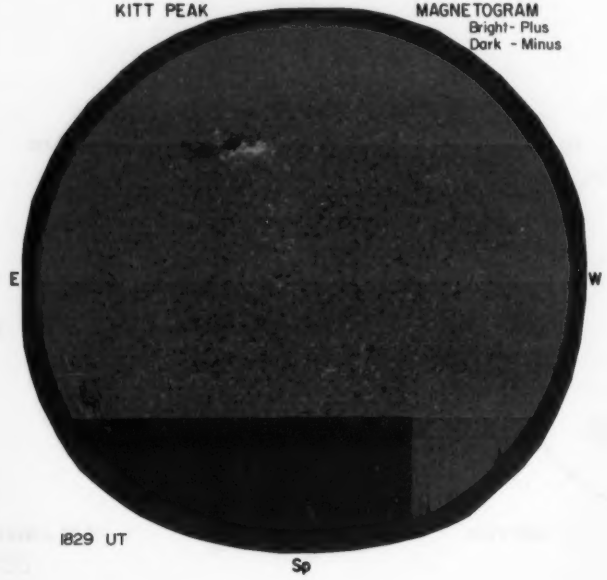
T (10^6 K), EM (10^{48} cm^{-3})

SACRAMENTO PEAK
CORONA (1.15 $R_\odot$)
5303 Å



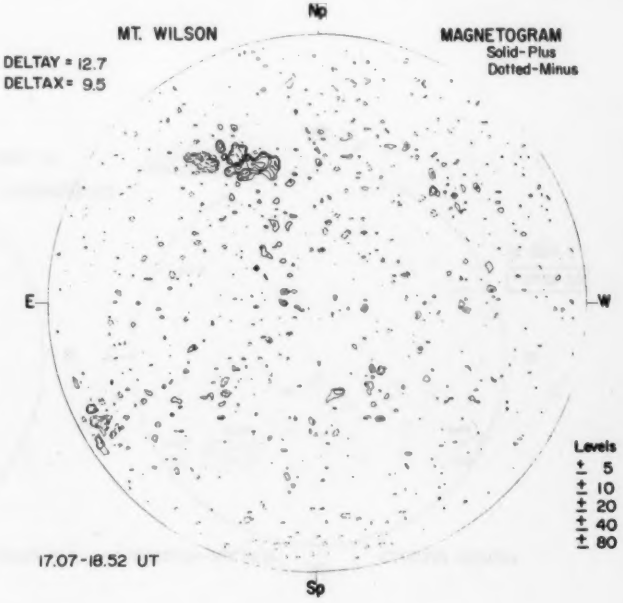
1600 UT

KITT PEAK
MAGNETOGRAM
Bright - Plus
Dark - Minus



1829 UT

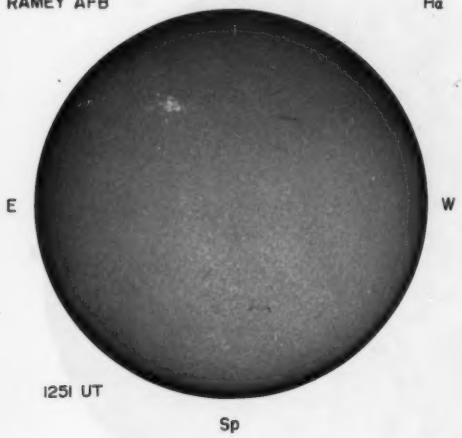
MT. WILSON
MAGNETOGRAM
Solid - Plus
Dotted - Minus
DELTAY = 12.7
DELTAX = 9.5



17.07-18.52 UT

03

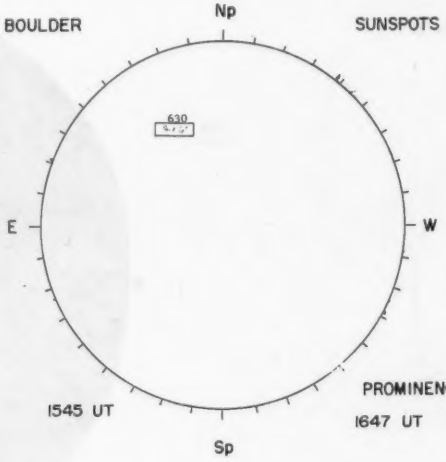
RAMEY AFB



1251 UT

Hα

BOULDER



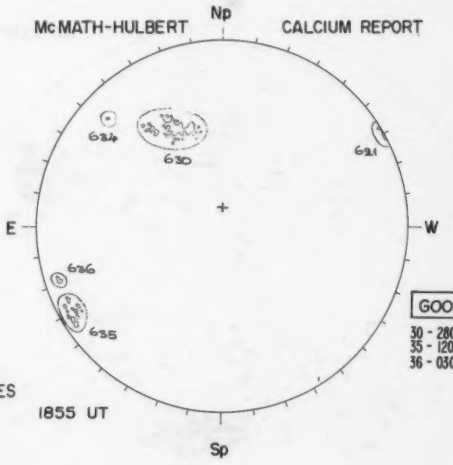
1545 UT

SUNSPOTS

PROMINENCES

1647 UT

McMATH-HULBERT



1855 UT

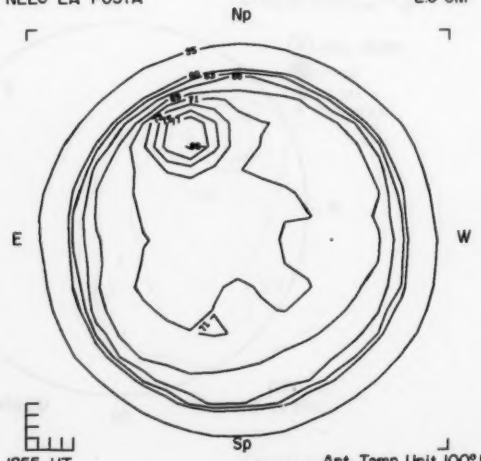
CALCIUM REPORT

GOOD | M

30 - 2800 - 3.5
35 - 1200 - 2.5
36 - 0300 - 2.5

NELC LA POSTA

2.0 CM

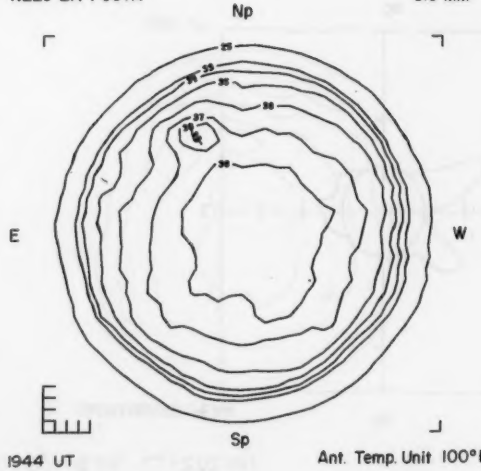


1855 UT

Ant. Temp. Unit 100°K

NELC LA POSTA

8.6 MM

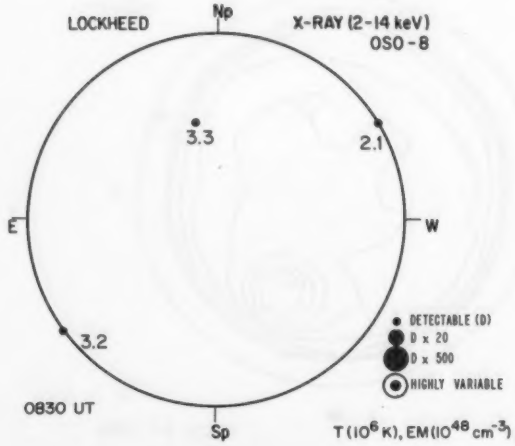


1944 UT

Ant. Temp. Unit 100°K

FEBRUARY 4, 1977 (P=-13.38, B_o=-6.25, L_o=270.19)

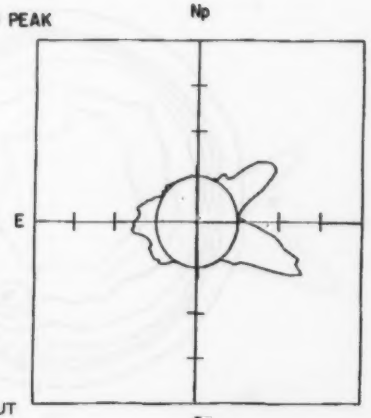
LOCKHEED X-RAY (2-14 keV) OSO-8



0830 UT

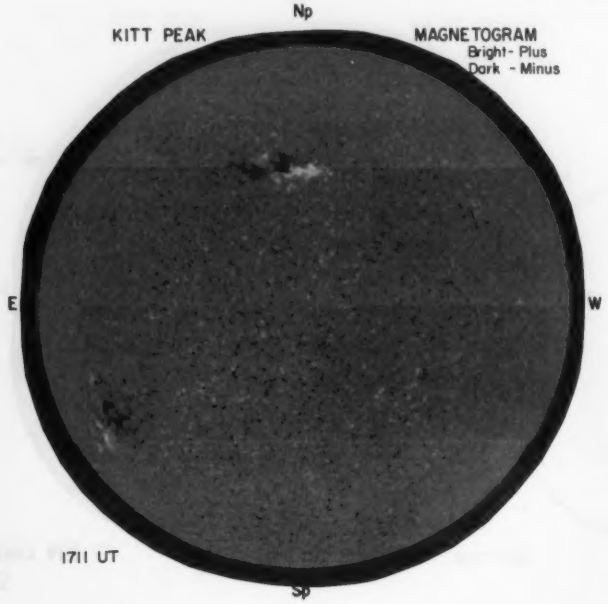
T(10^6 K), EM(10^{48} cm^{-3})

SACRAMENTO PEAK CORONA (1.15 $R_\odot$) 5303 Å



2219 UT

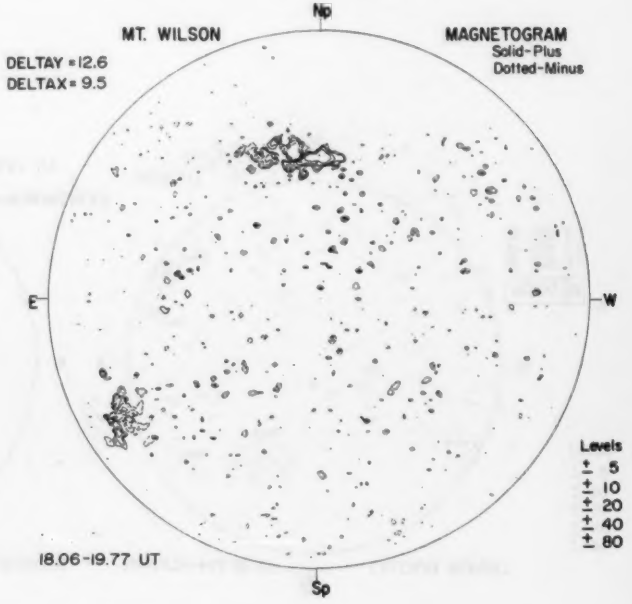
KITT PEAK MAGNETOGRAM Bright - Plus Dark - Minus



1711 UT

MT. WILSON MAGNETOGRAM Solid - Plus Dotted - Minus

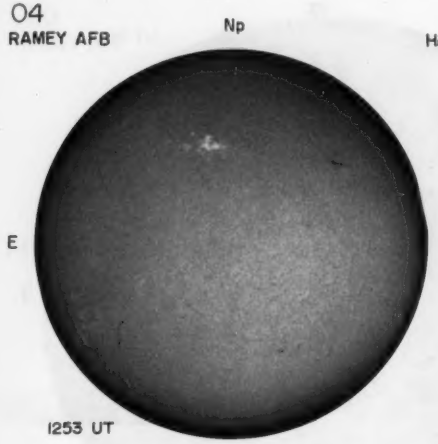
DELTAY = 12.6
DELTAX = 9.5



18.06-19.77 UT

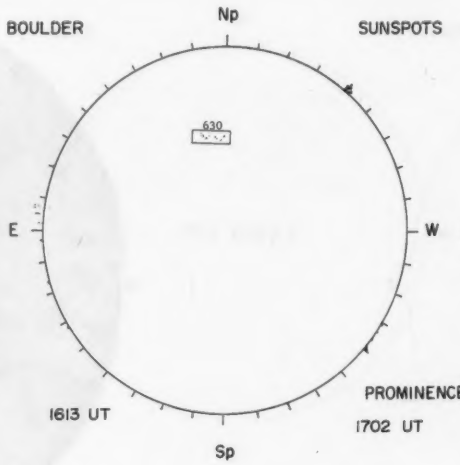
04

RAMEY AFB



1253 UT

Hα BOULDER



1613 UT

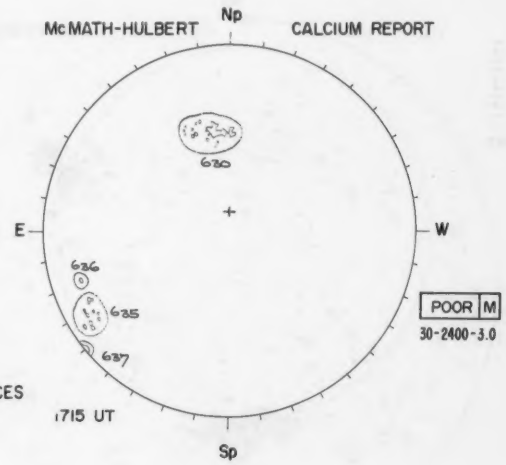
SUNSPOTS

PROMINENCES

1702 UT

McMATH-HULBERT

CALCIUM REPORT

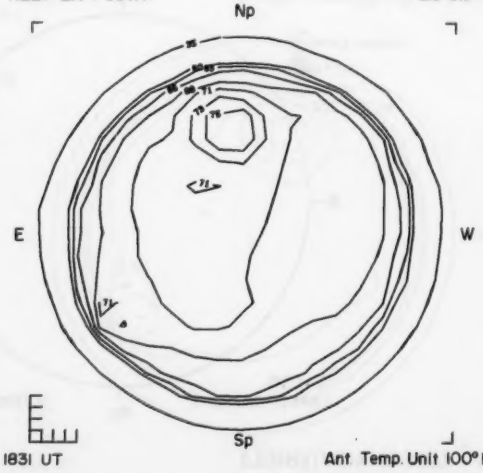


1715 UT

POOR | M

30-2400-3.0

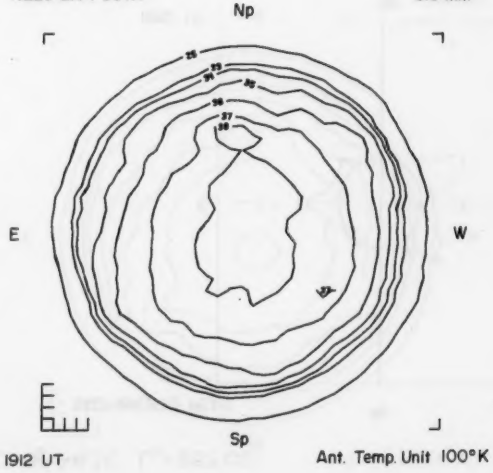
NELC LA POSTA 2.0 CM



1831 UT

Ant. Temp. Unit 100°K

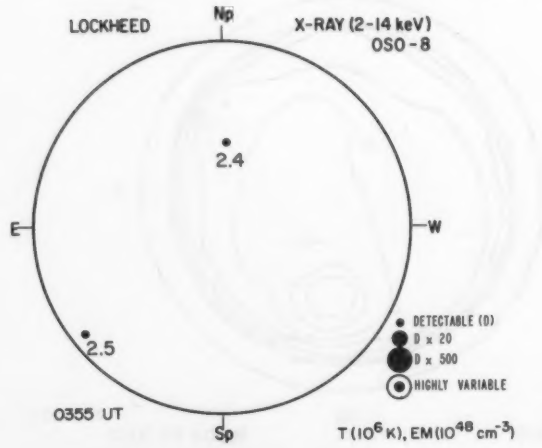
NELC LA POSTA 8.6 MM

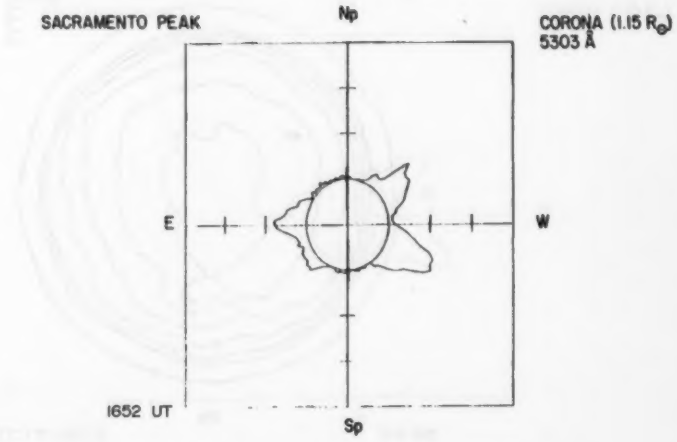


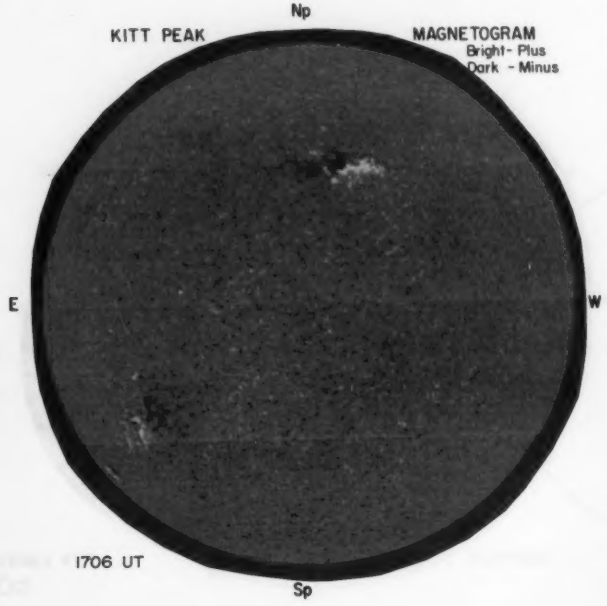
1912 UT

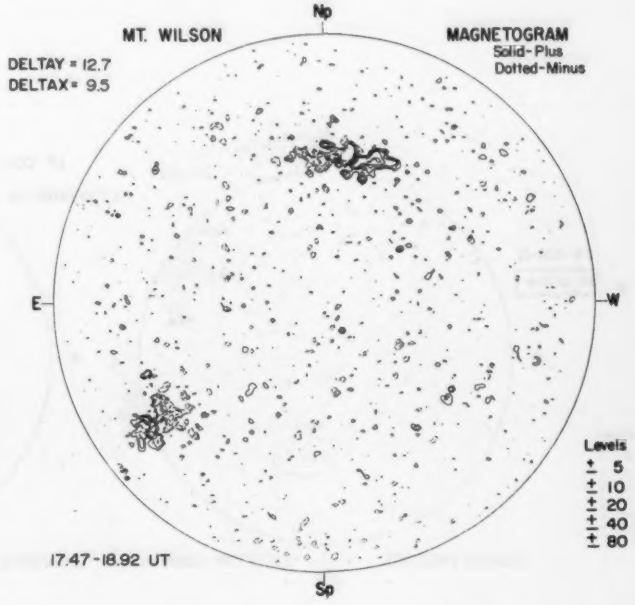
Ant. Temp. Unit 100°K

FEBRUARY 5, 1977 (P = -13.77, B_o = -6.31, L_o = 257.02)



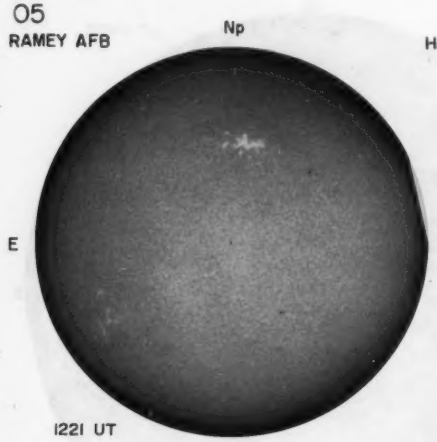






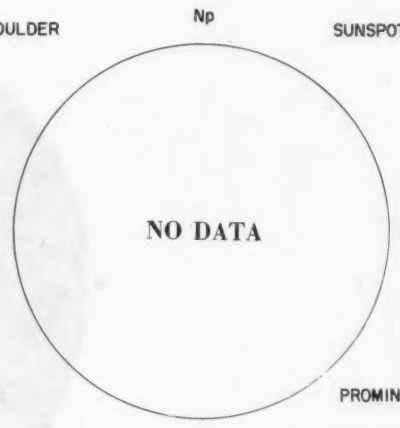
05

RAMEY AFB



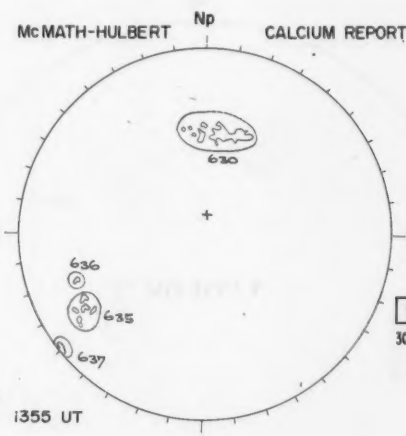
1221 UT

Hα BOULDER



SUNSPOTS

McMATH-HULBERT



1355 UT

CALCIUM REPORT

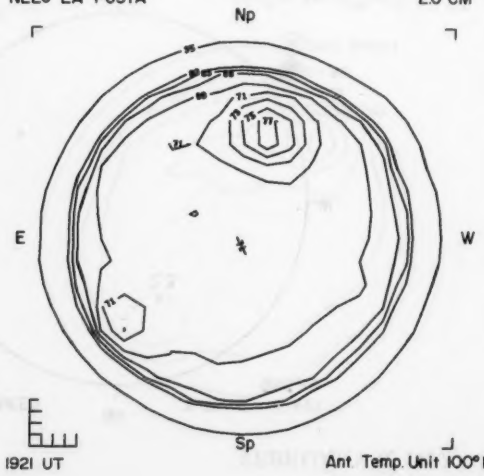
POOR | M

30-2400-3.5

PROMINENCES

NELC LA POSTA

2.0 CM

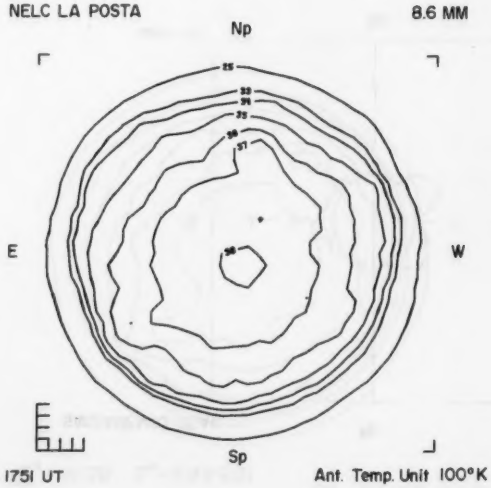


1921 UT

Ant. Temp. Unit 100°K

NELC LA POSTA

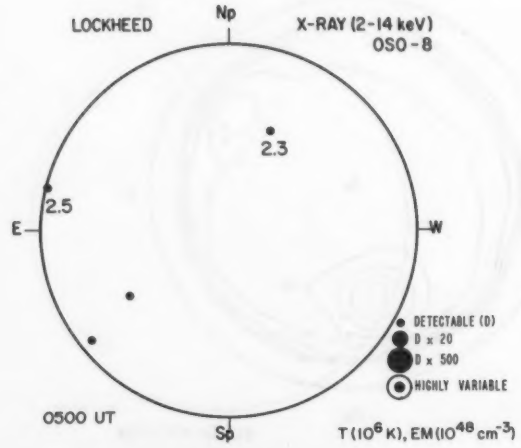
8.6 MM

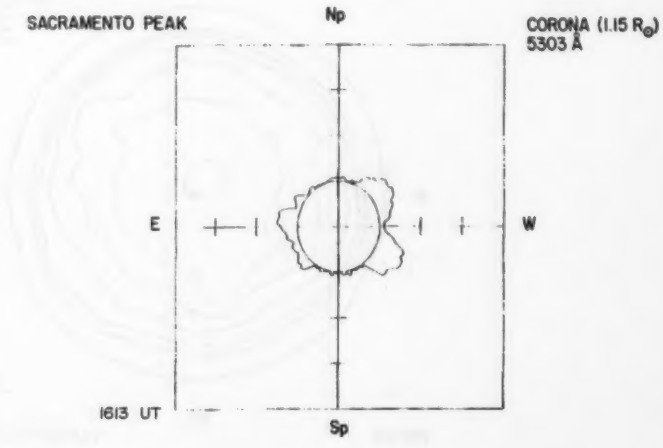


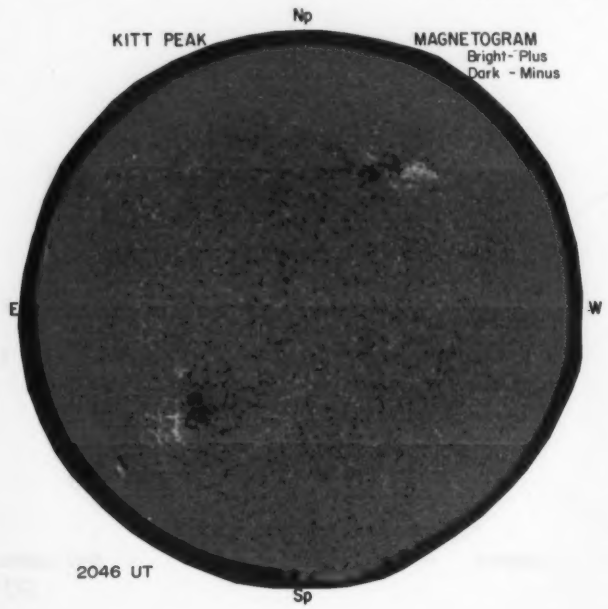
1751 UT

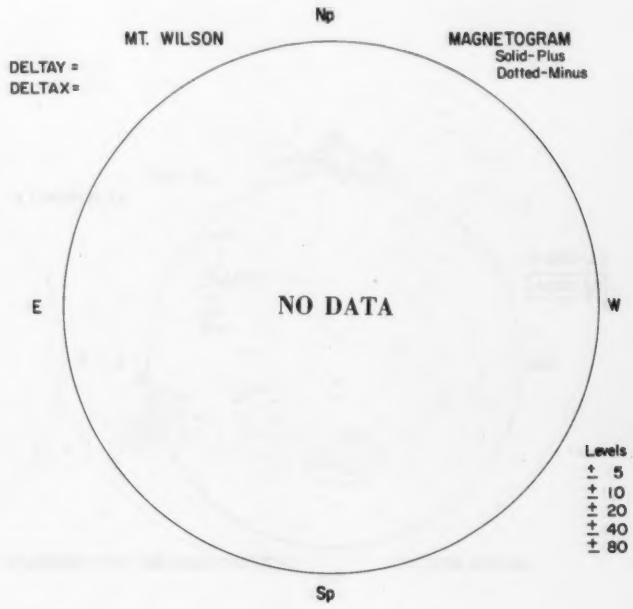
Ant. Temp. Unit 100°K

FEBRUARY 6, 1977 (P =-14.16, B_o =-6.38, L_o =243.85)



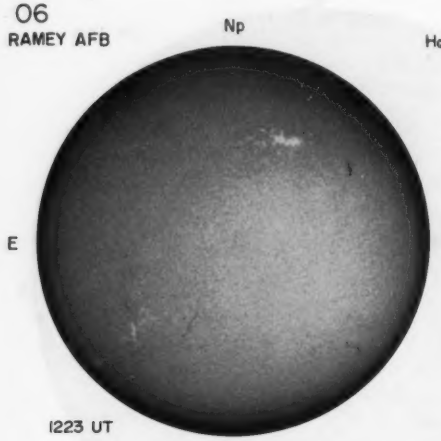






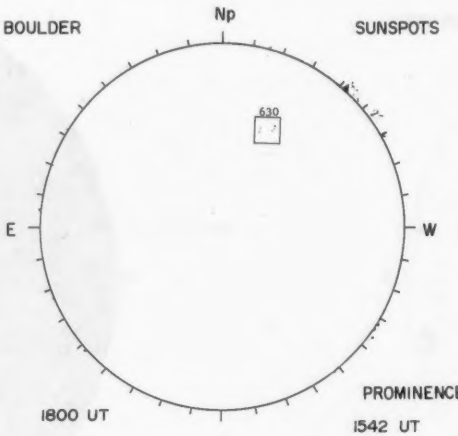
06

RAMEY AFB



1223 UT

Hα BOULDER



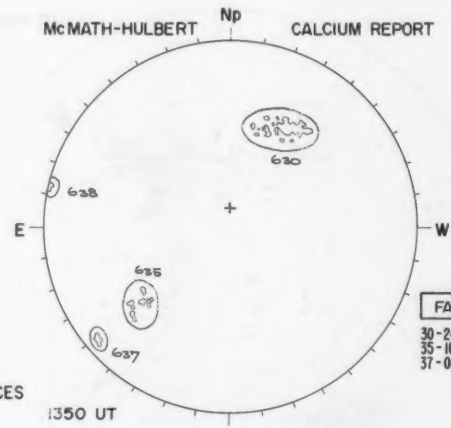
1800 UT

SUNSPOTS

PROMINENCES

1542 UT

McMATH-HULBERT



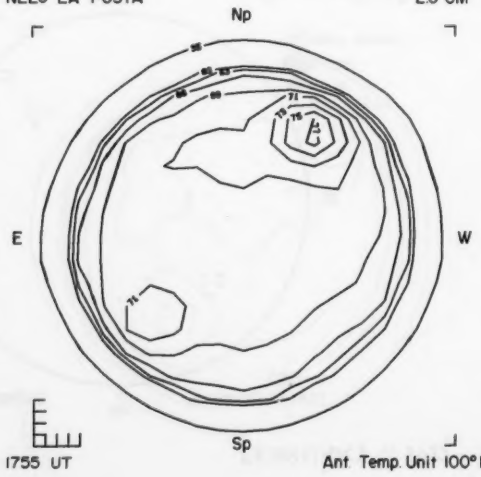
1350 UT

CALCIUM REPORT

FAIR | D

30-2400-3.0
35-1000-2.5
37-0600-3.0

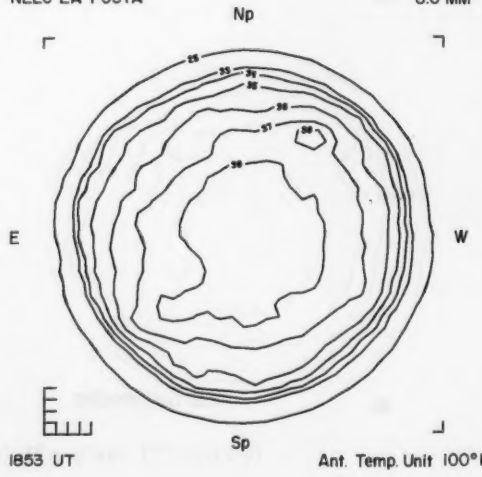
NELC LA POSTA 2.0 CM



1755 UT

Ant. Temp. Unit 100°K

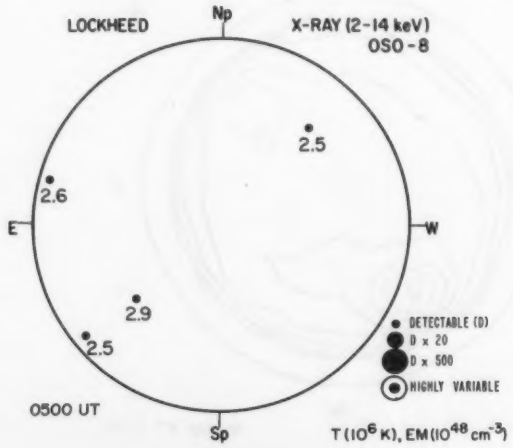
NELC LA POSTA 8.6 MM

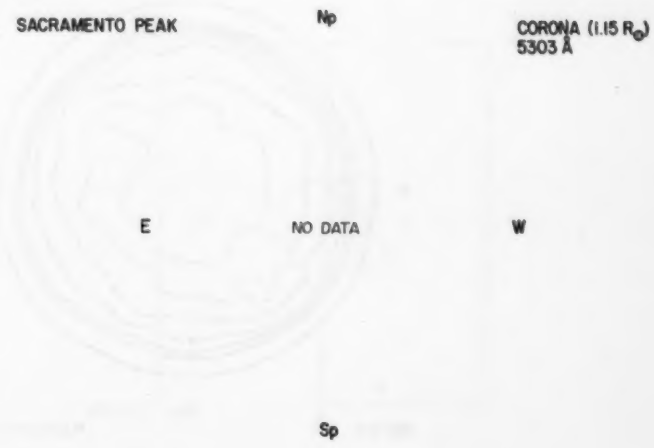


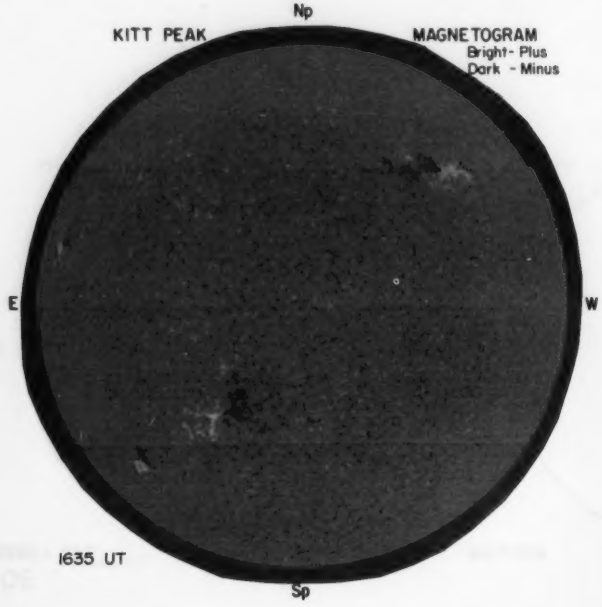
1853 UT

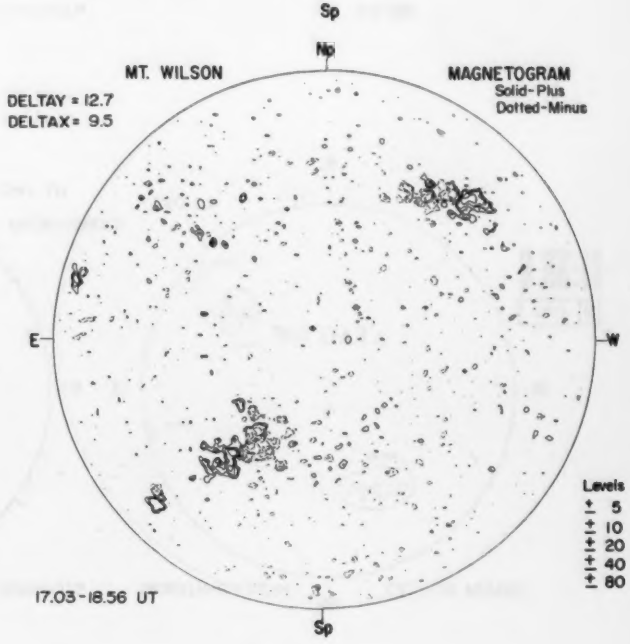
Ant. Temp. Unit 100°K

FEBRUARY 7, 1977 (P =-14.54, B_0 =-6.44, L_0 =230.69)



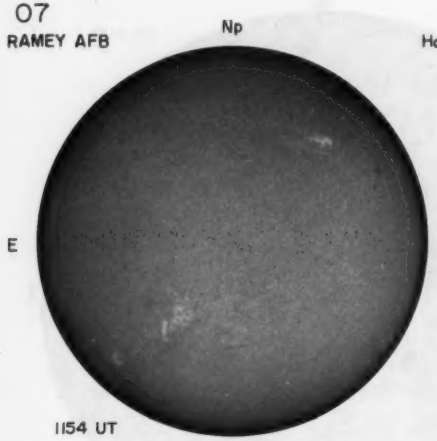






07

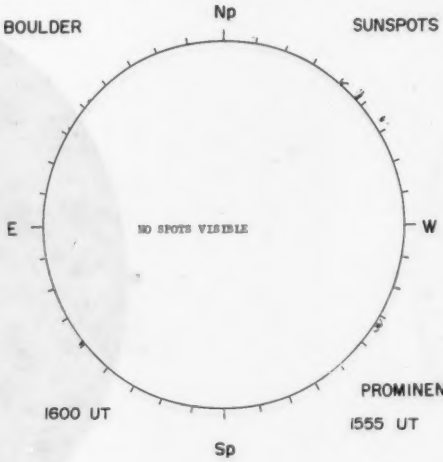
RAMEY AFB



Ha

1154 UT

BOULDER



1600 UT

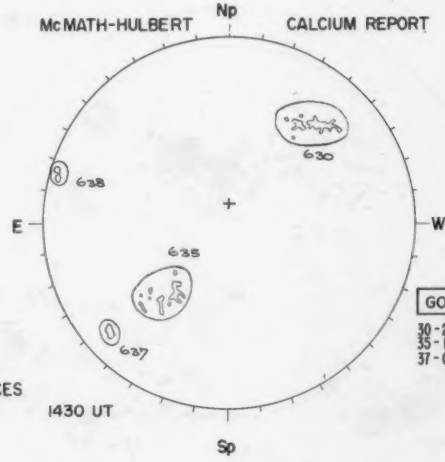
SUNSPOTS

PROMINENCES

1555 UT

McMATH-HULBERT

CALCIUM REPORT



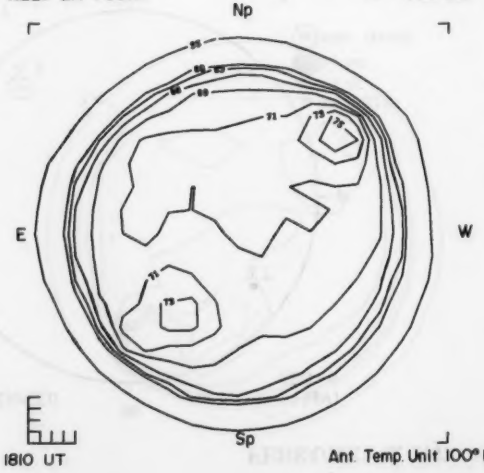
1430 UT

GOOD	S

30 - 2400 - 3.0
35 - 1200 - 2.5
37 - 0800 - 3.5

NELC LA POSTA

2.0 CM

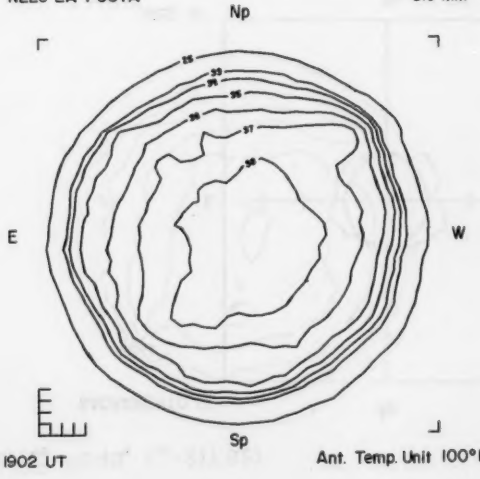


1810 UT

Ant. Temp. Unit 100° K

NELC LA POSTA

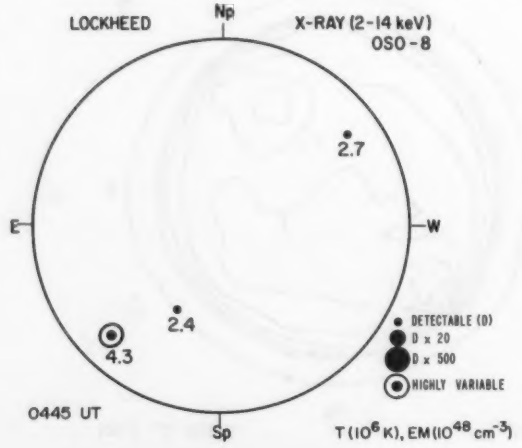
8.6 MM

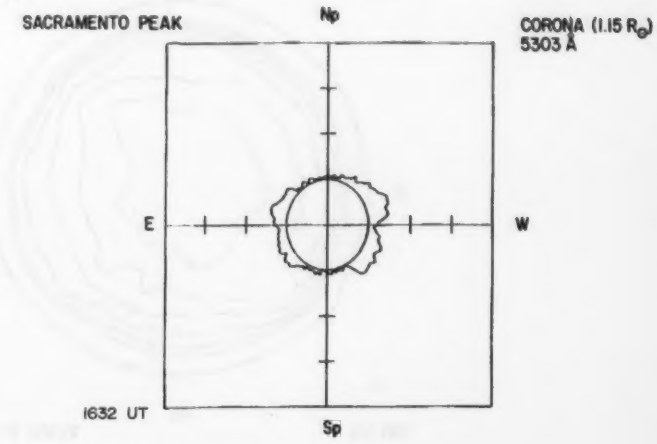


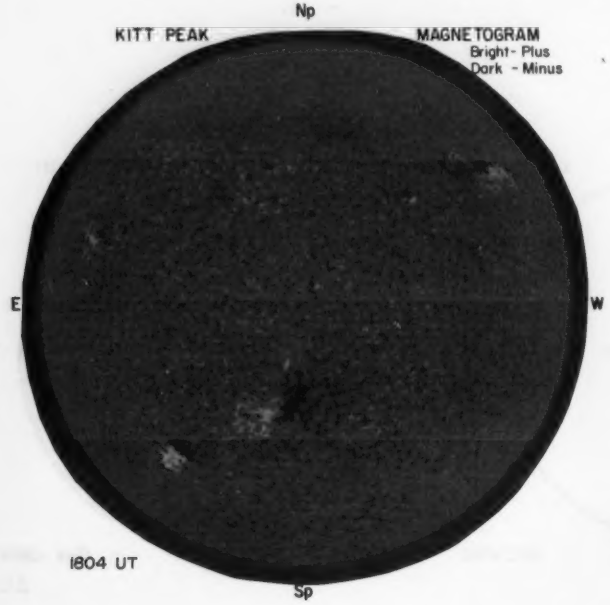
1902 UT

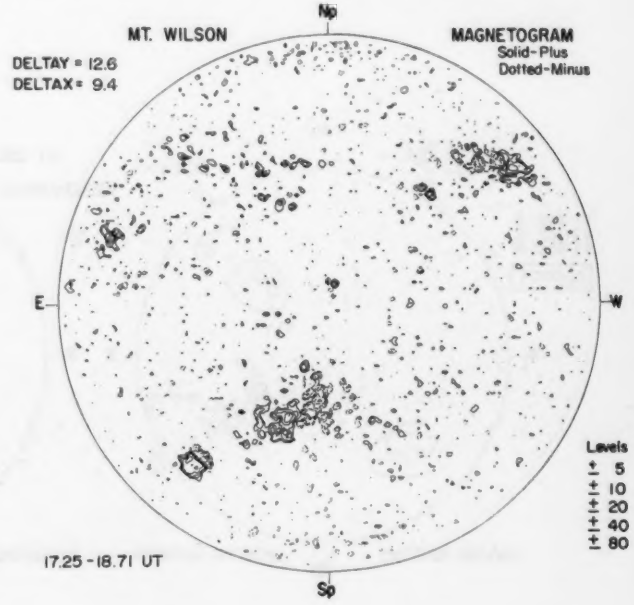
Ant. Temp. Unit 100° K

FEBRUARY 8, 1977 (P = -14.92, B_o = -6.49, L_o = 217.52)



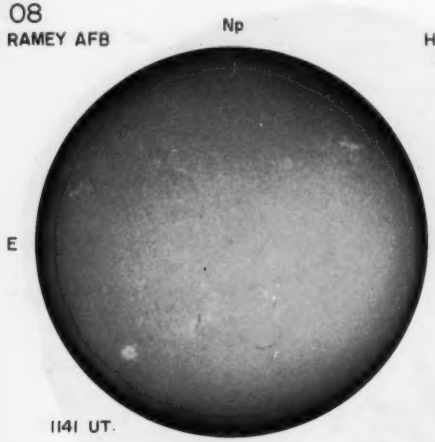






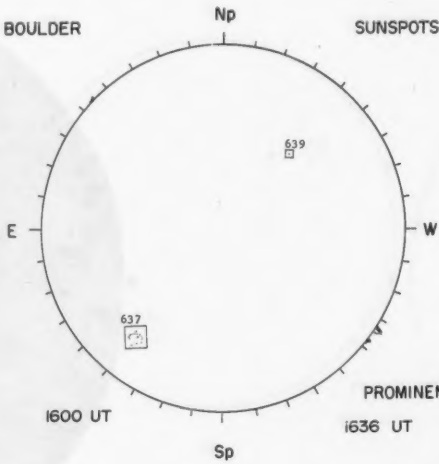
08

RAMEY AFB



1141 UT

Hα BOULDER



1600 UT

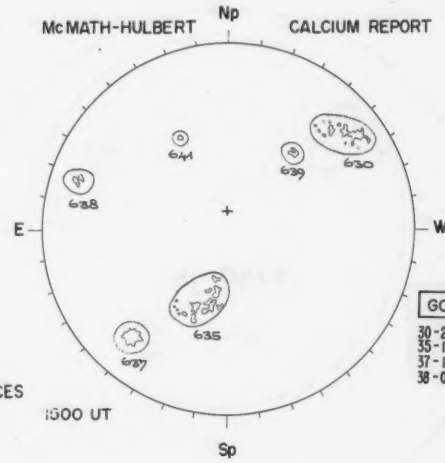
SUNSPOTS

PROMINENCES

1636 UT

McMATH-HULBERT

CALCIUM REPORT

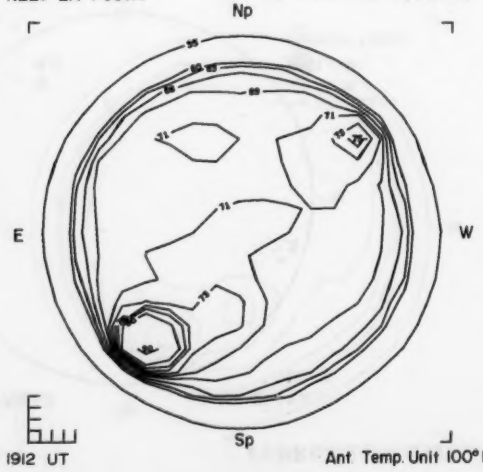


1500 UT

GOOD | M

30 - 2200 - 3.0
35 - 1300 - 2.5
37 - 1700 - 4.0
38 - 0500 - 2.5

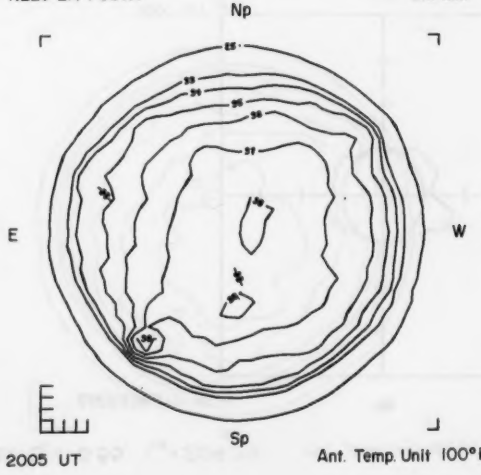
NELC LA POSTA 2.0 CM



1912 UT

Ant. Temp. Unit 100°K

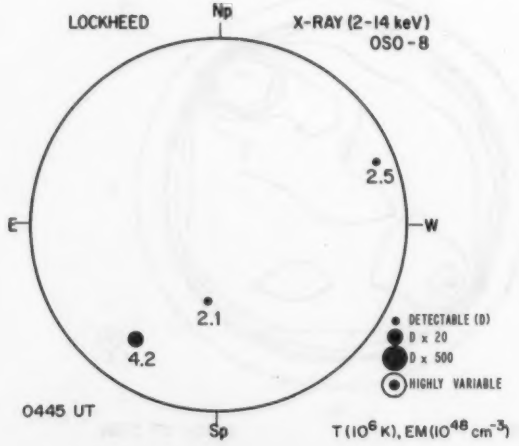
NELC LA POSTA 8.6 MM

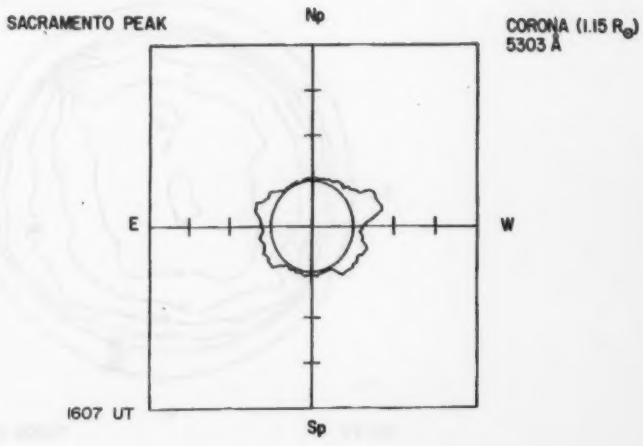


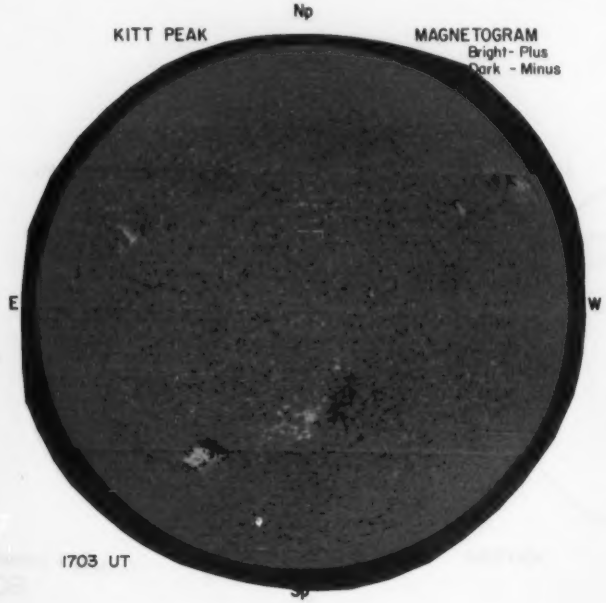
2005 UT

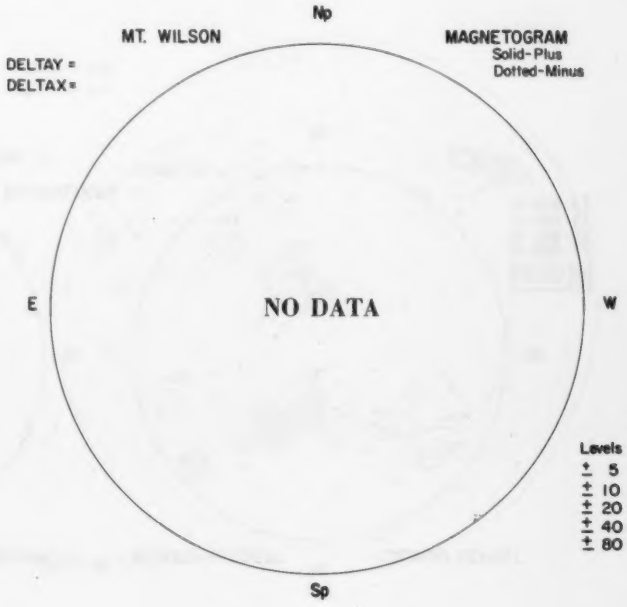
Ant. Temp. Unit 100°K

FEBRUARY 9, 1977 (P = -15.29, B_o = -6.55, L_o = 204.35)



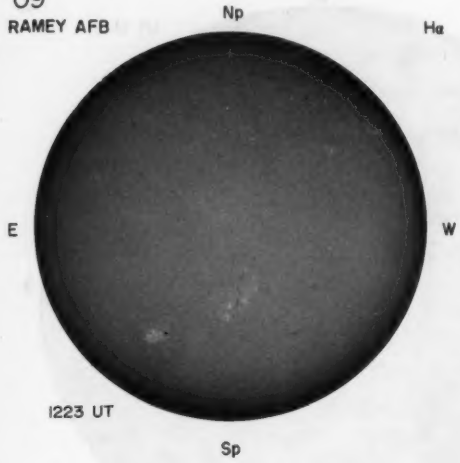






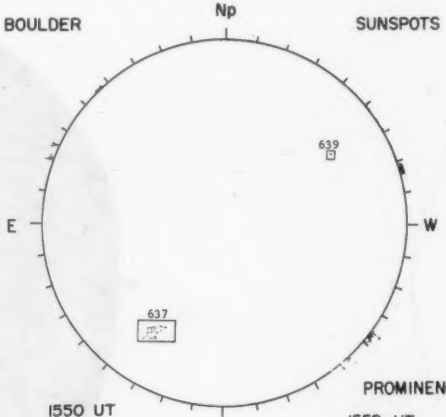
09

RAMEY AFB



1223 UT

Hα BOULDER



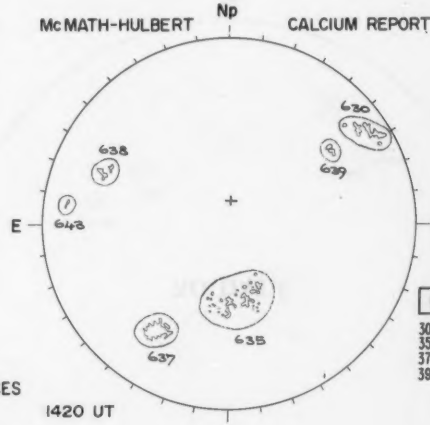
1550 UT

SUNSPOTS

PROMINENCES

1559 UT

McMATH-HULBERT

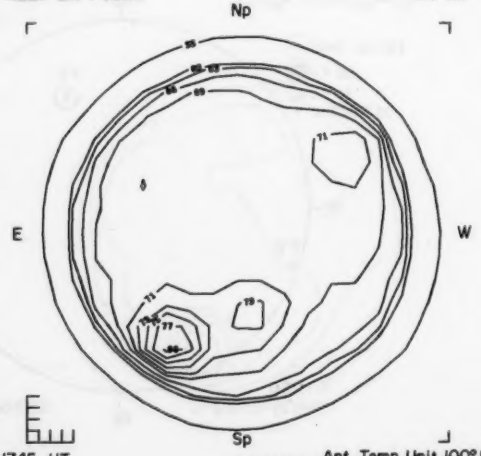


1420 UT

CALCIUM REPORT

FAIR	M
30 - 2100 - 2.5	
35 - 1200 - 2.5	
37 - 2000 - 3.5	
39 - 0300 - 2.5	

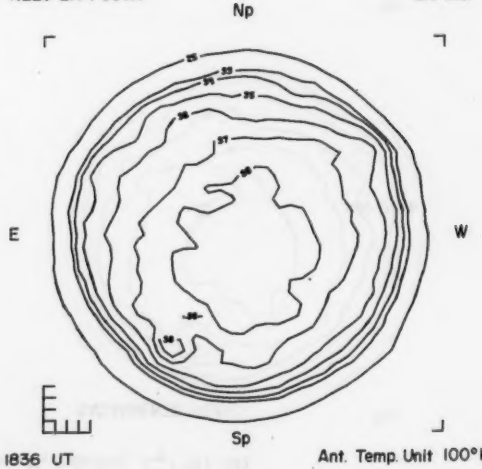
NELC LA POSTA 2.0 CM



1745 UT

Ant. Temp. Unit 100°K

NELC LA POSTA 8.6 MM



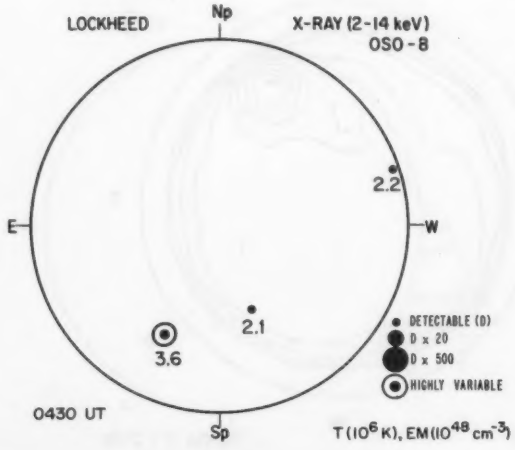
1836 UT

Ant. Temp. Unit 100°K

FEBRUARY 10, 1977 (P =-15.66, B_o =-6.60, L_o = 191.19)

LOCKHEED

X-RAY (2-14 keV)
OSO-8

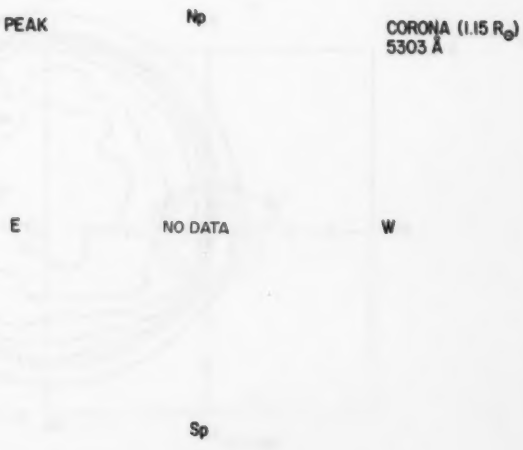


0430 UT

T (10^6 K), EM (10^{48} cm^{-3})

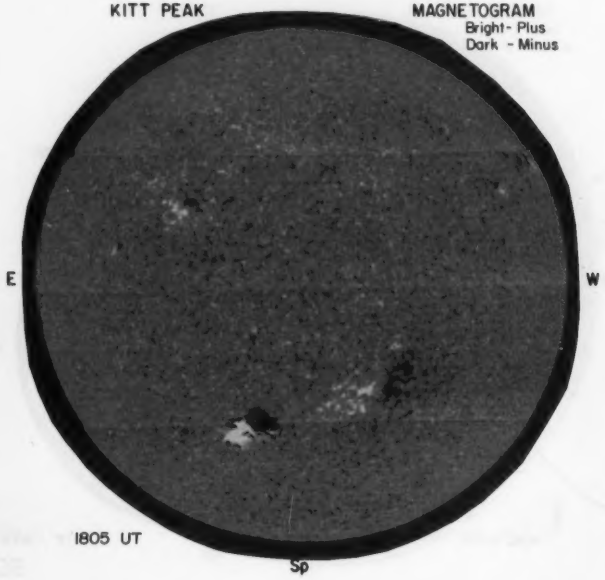
SACRAMENTO PEAK

CORONA (1.15 $R_\odot$)
5303 Å



KITT PEAK

MAGNETOGRAM
Bright - Plus
Dark - Minus

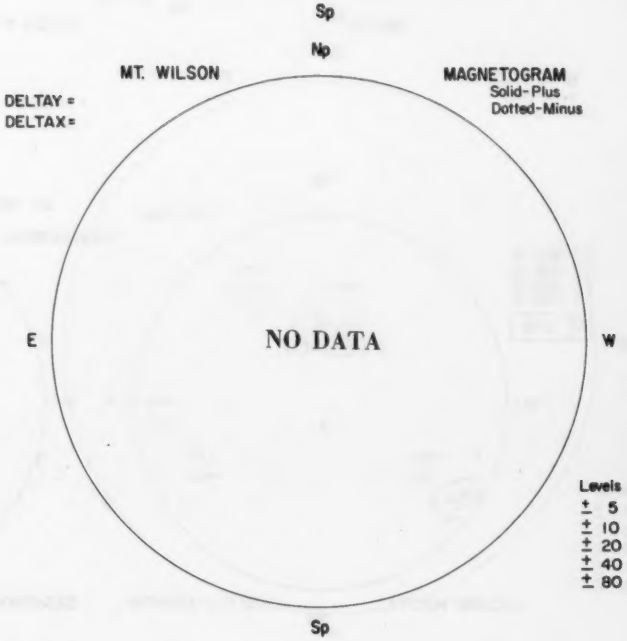


1805 UT

MT. WILSON

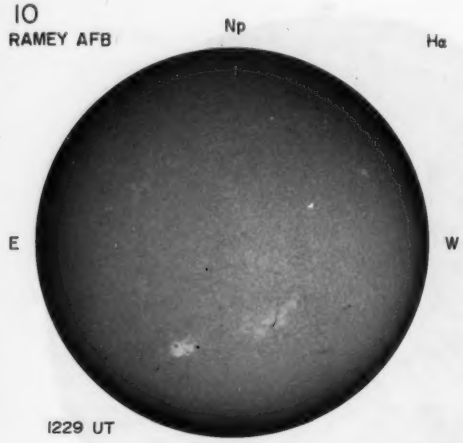
DELTAY =
DELTAX =

MAGNETOGRAM
Solid - Plus
Dotted - Minus



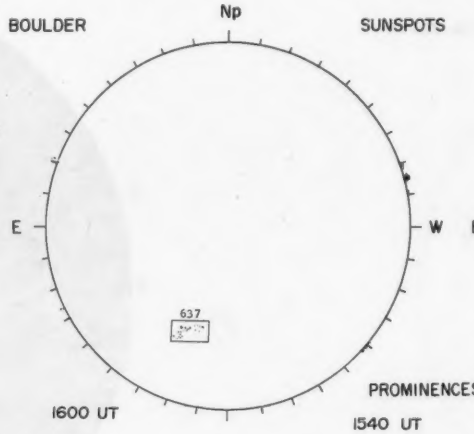
10

RAMEY AFB



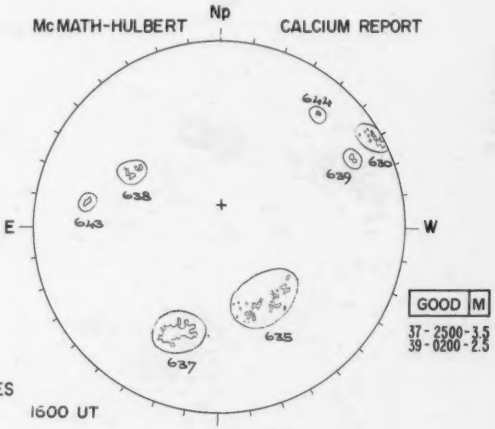
1229 UT

Hα BOULDER



1600 UT

SUNSPOTS



GOOD | M

37 - 2500 - 3.5

39 - 0200 - 2.5

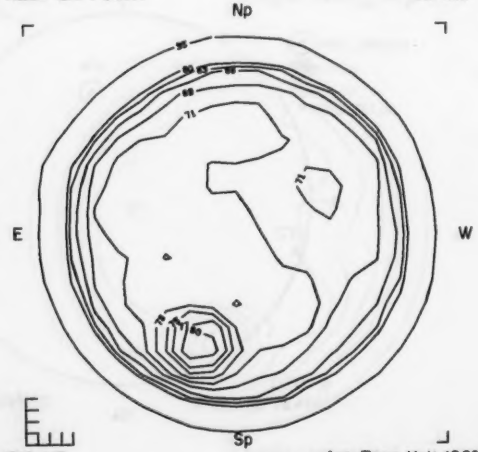
1600 UT

PROMINENCES

1540 UT

McMATH-HULBERT CALCIUM REPORT

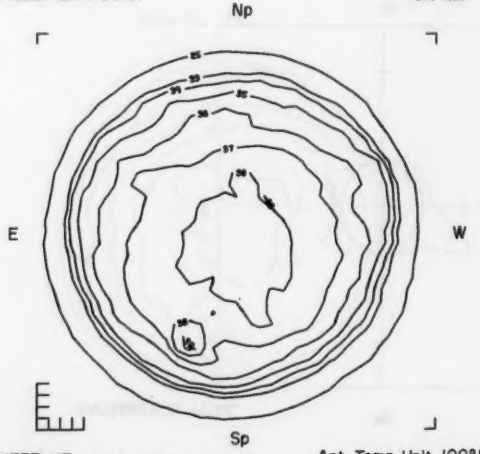
NELC LA POSTA 2.0 CM



1914 UT

Ant. Temp. Unit 100°K

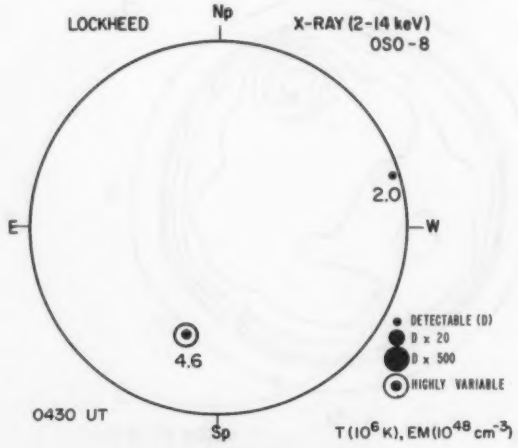
NELC LA POSTA 8.6 MM

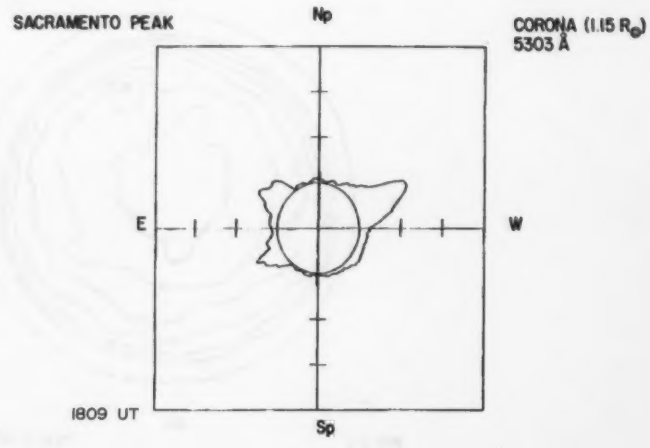


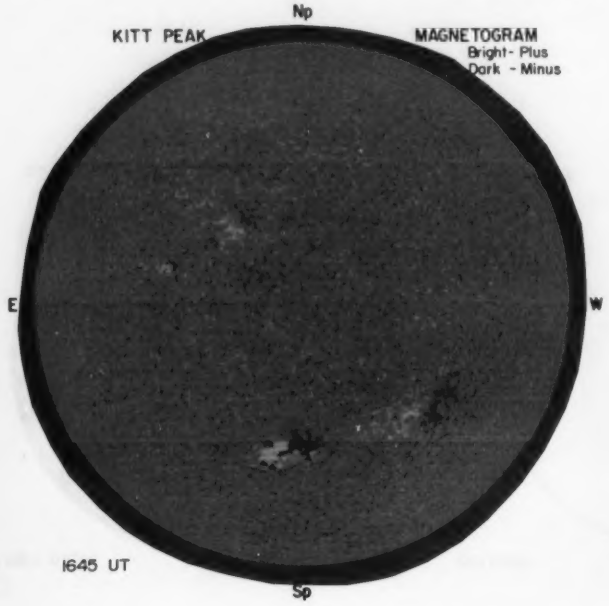
1737 UT

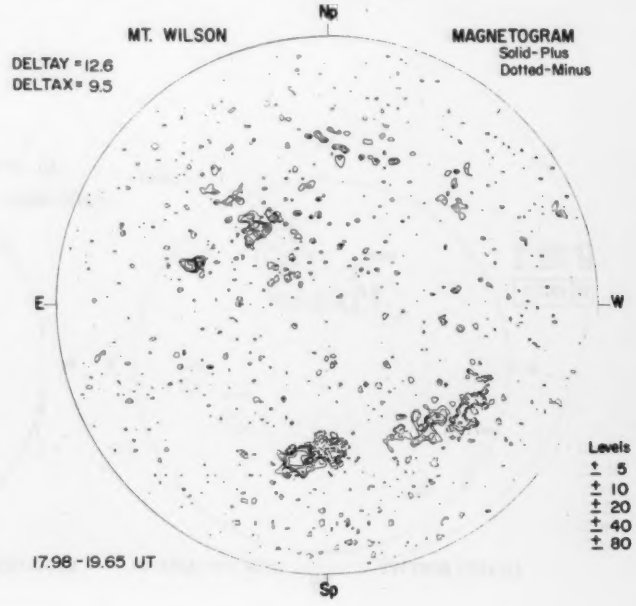
Ant. Temp. Unit 100°K

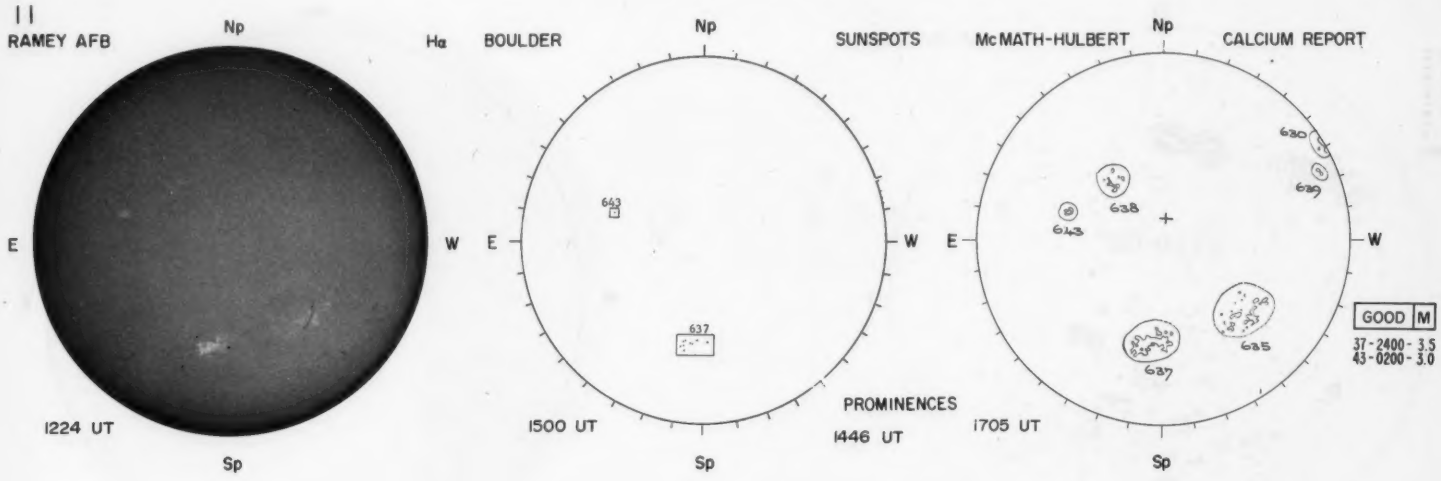
FEBRUARY 11, 1977 (P = -16.02, B_o = -6.66, L_o = 178.02)

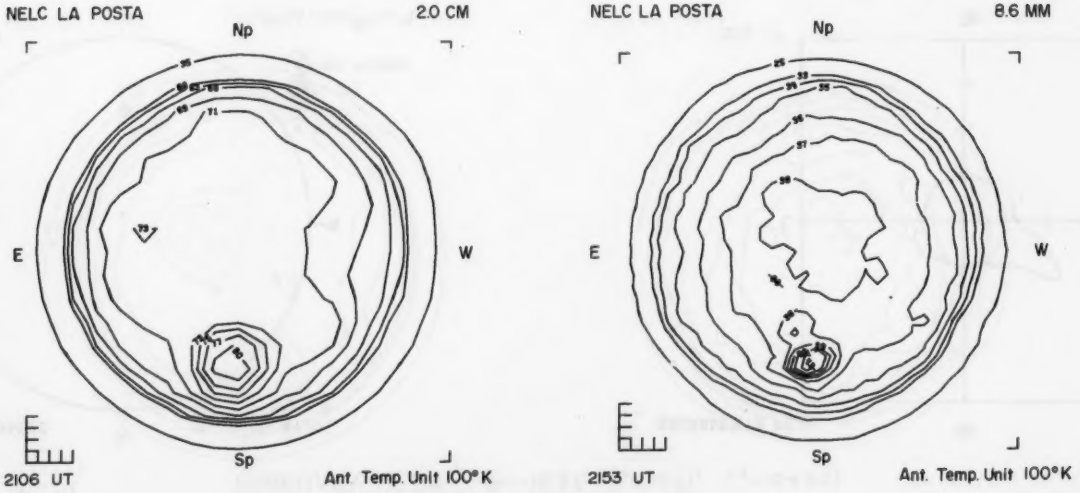




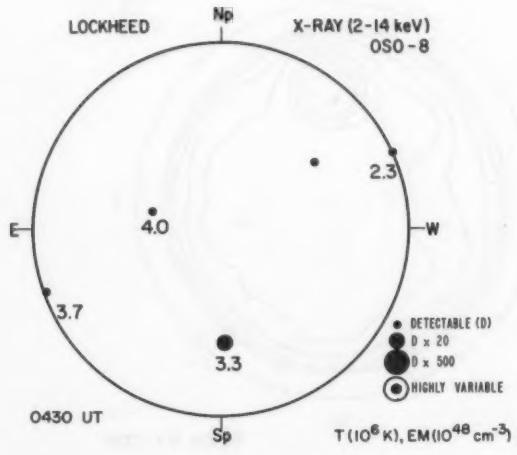


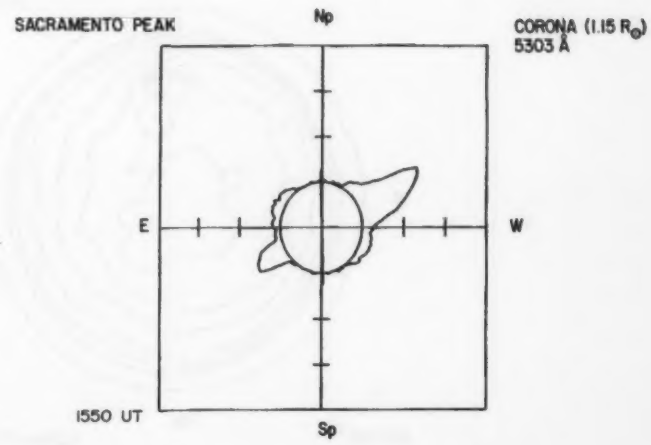


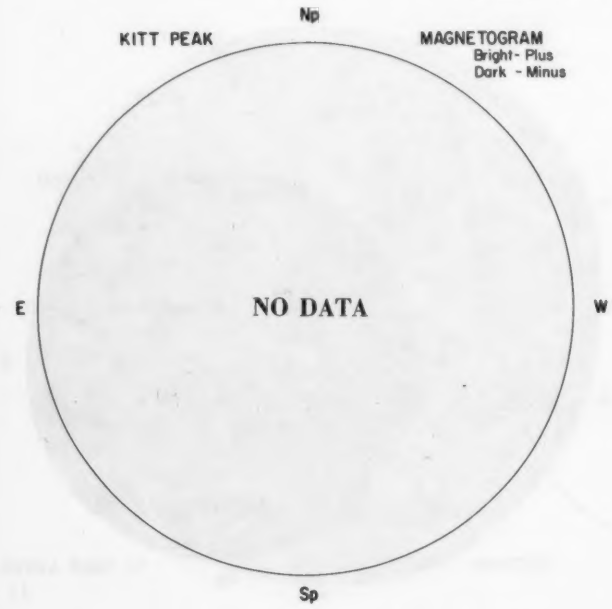

RAMEY AFB
Np
Hα
E
W
Sp
1224 UT
BOULDER
SUNSPOTS
643
637
1500 UT
PROMINENCES
1446 UT
McMATH-HULBERT
CALCIUM REPORT
630
639
638
643
635
637
GOOD M
37 - 2400 - 3.5
43 - 0200 - 3.0
1705 UT

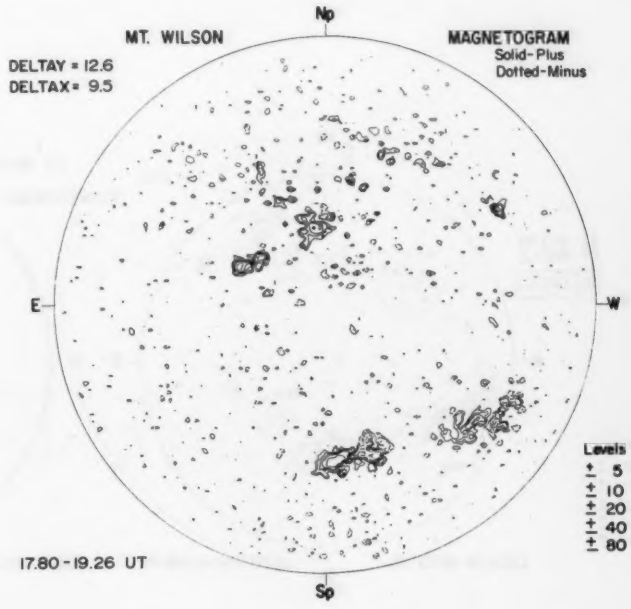

NELC LA POSTA
2.0 CM
Np
E
W
Sp
2106 UT
Ant. Temp. Unit 100°K
NELC LA POSTA
8.6 MM
2153 UT
Ant. Temp. Unit 100°K

FEBRUARY 12, 1977 (P = -16.37, B_o = -6.71, L_o = 164.85)



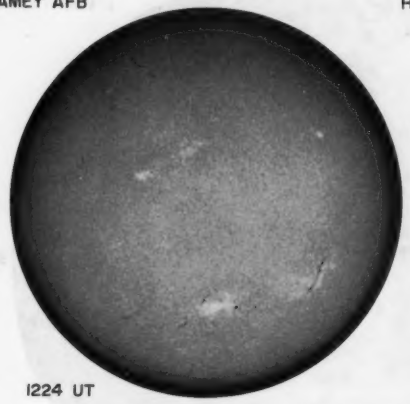






12

RAMEY AFB Np Hα

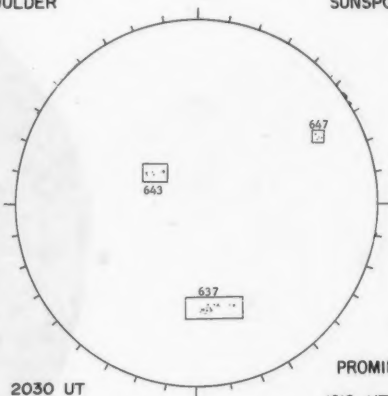


E W

1224 UT

Sp

BOULDER Np SUNSPOTS



E W

2030 UT

Sp

McMATH-HULBERT Np CALCIUM REPORT

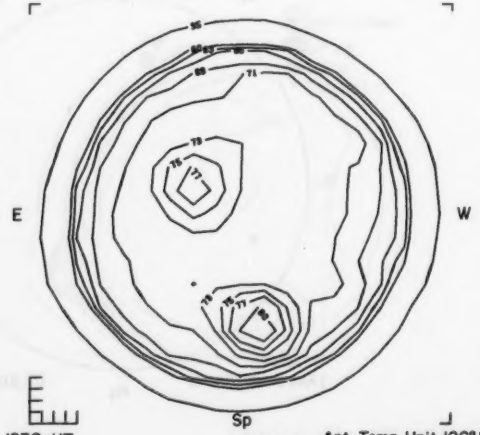
E W

PROMINENCES

1610 UT

Sp

NELC LA POSTA 2.0 CM Np



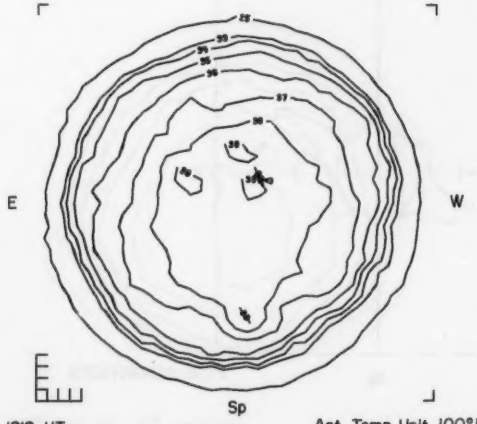
E W

Sp

1939 UT

Ant. Temp. Unit 100°K

NELC LA POSTA 8.6 MM Np



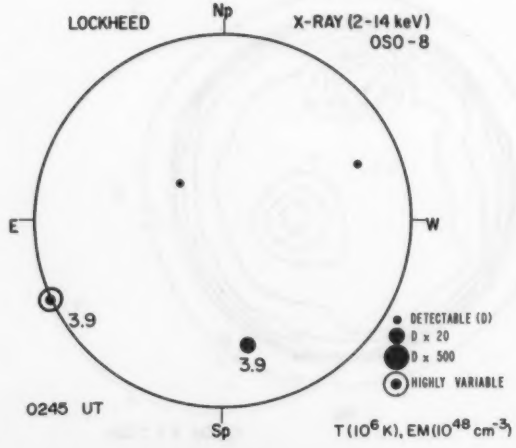
E W

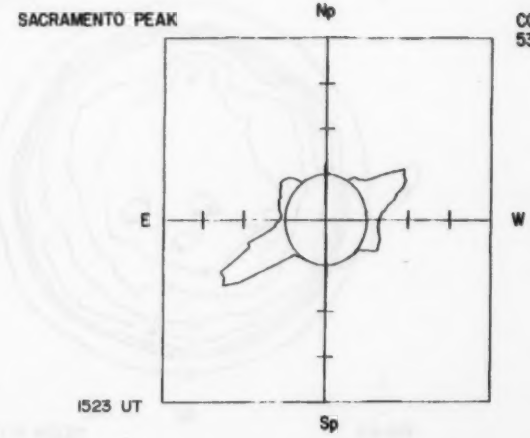
Sp

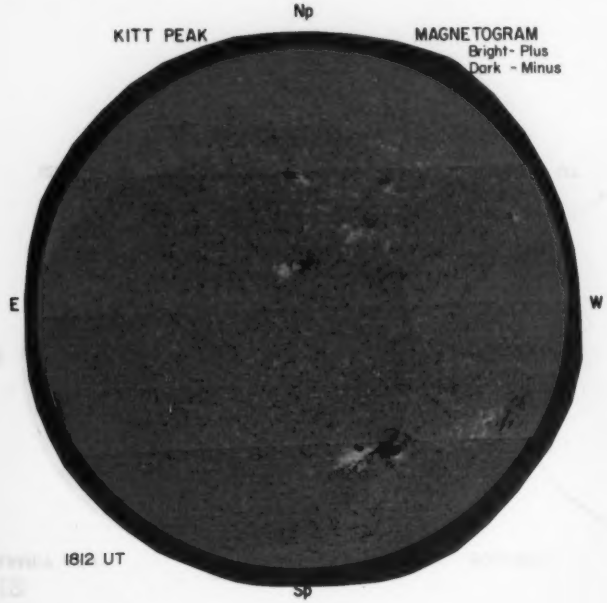
1812 UT

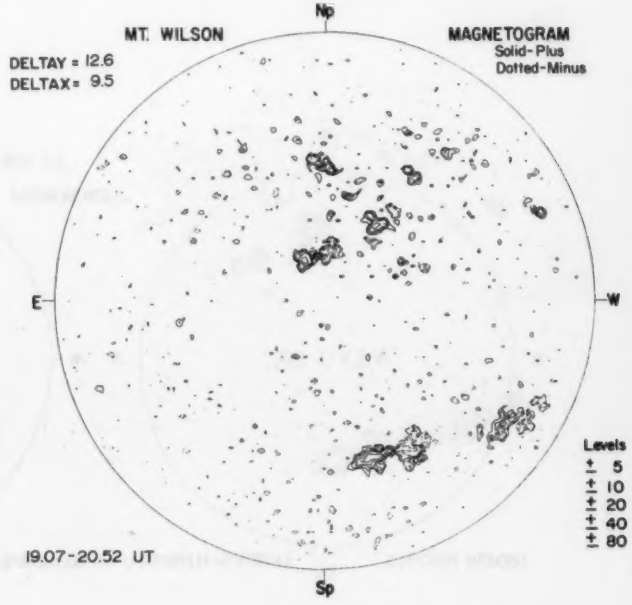
Ant. Temp. Unit 100°K

FEBRUARY 13, 1977 (P=-16.73, B_0=-6.75, L_0=151.68)



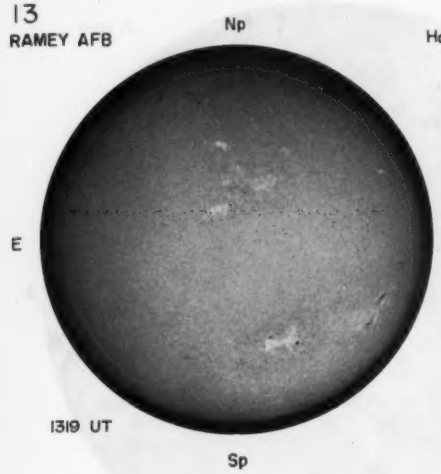






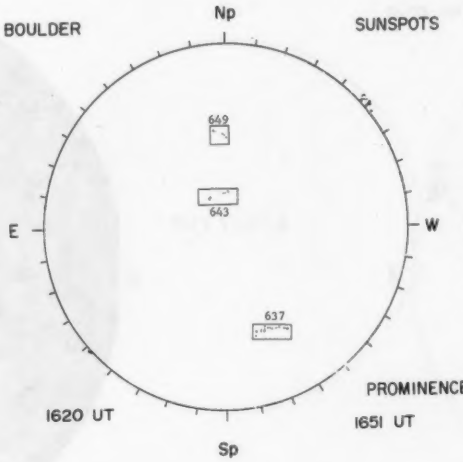
13

RAMEY AFB



1319 UT

BOULDER SUNSPOTS

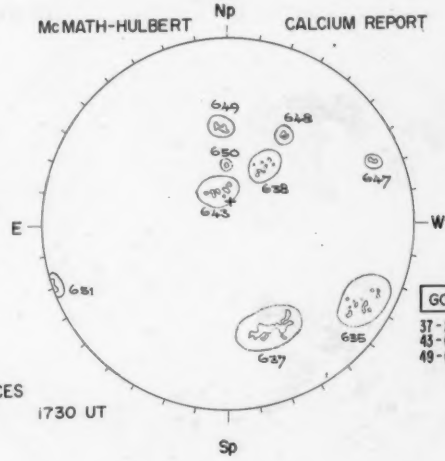


1620 UT

PROMINENCES

1651 UT

McMATH-HULBERT CALCIUM REPORT

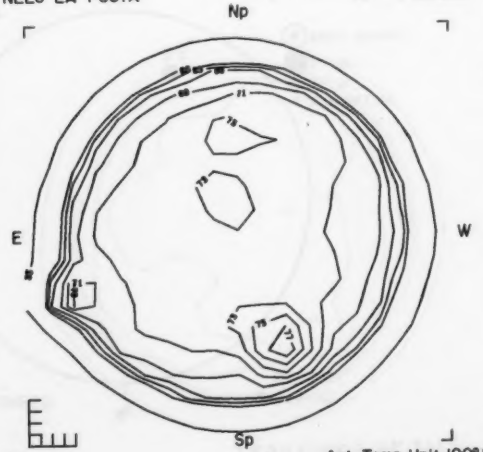


1730 UT

GOOD	D

37 - 2000 - 3.5
43 - 0500 - 3.0
49 - 0400 - 3.0

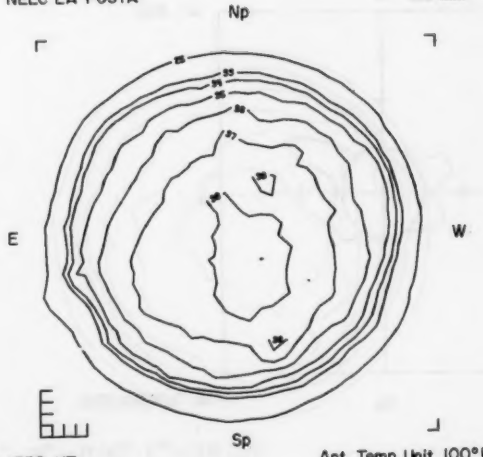
NELC LA POSTA 2.0 CM



1910 UT

Ant. Temp. Unit 100°K

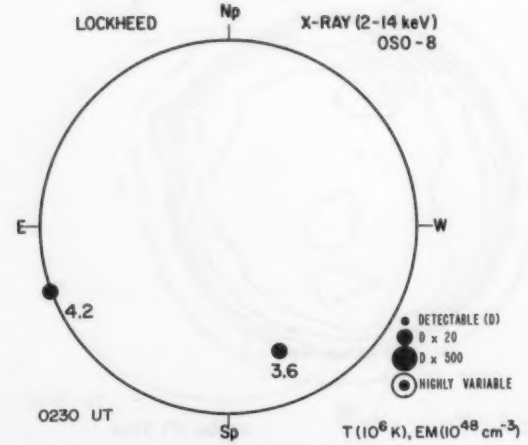
NELC LA POSTA 8.6 MM

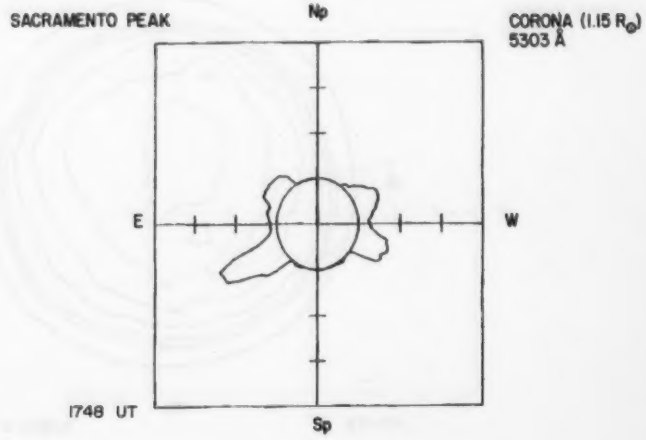


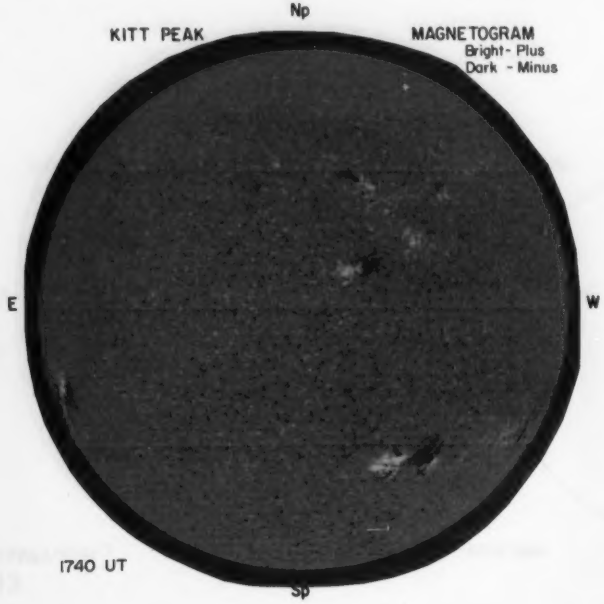
1738 UT

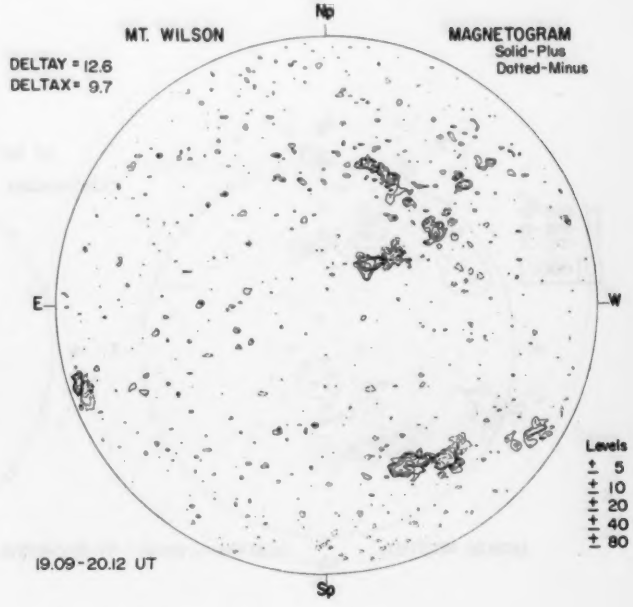
Ant. Temp. Unit 100°K

FEBRUARY 14, 1977 (P =-17.07, B_0 =-6.80, L_0 =138.52)



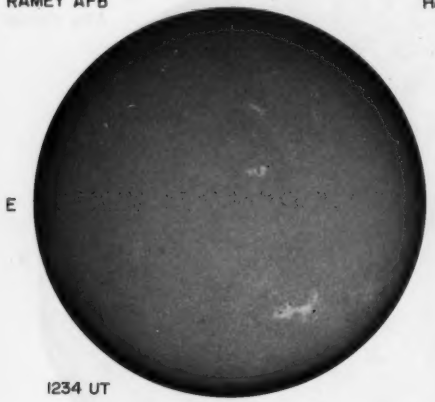






14

RAMEY AFB Hα

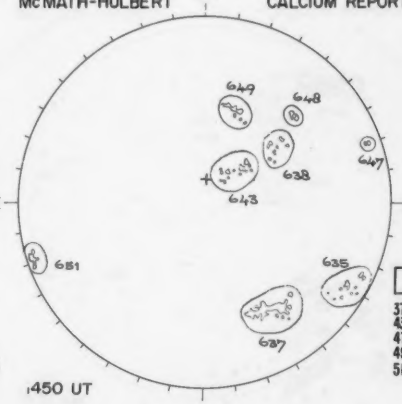


1234 UT

BOULDER SUNSPOTS

PROMINENCES

McMATH-HULBERT CALCIUM REPORT

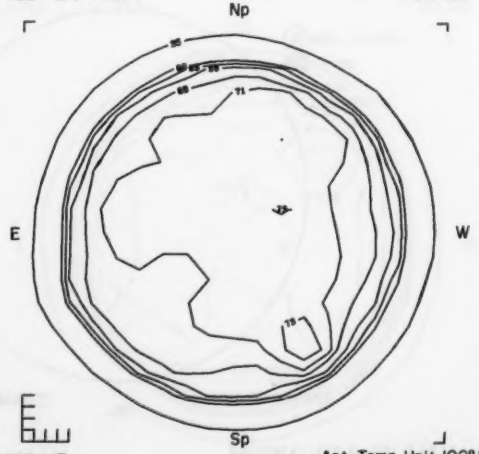


1450 UT

FAIR	D

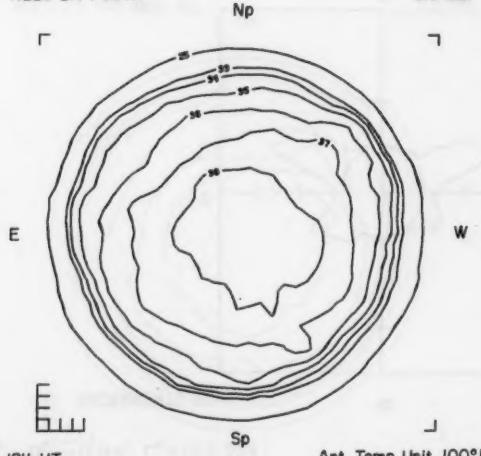
37 - 2000 - 3.5
43 - 0700 - 3.0
47 - 0200 - 2.5
49 - 0600 - 3.0
51 - 0800 - 2.5

NELC LA POSTA 2.0 CM



1939 UT Ant. Temp. Unit 100°K

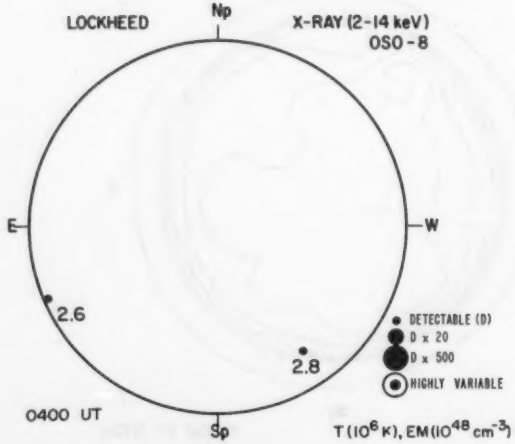
NELC LA POSTA 8.6 MM



1811 UT Ant. Temp. Unit 100°K

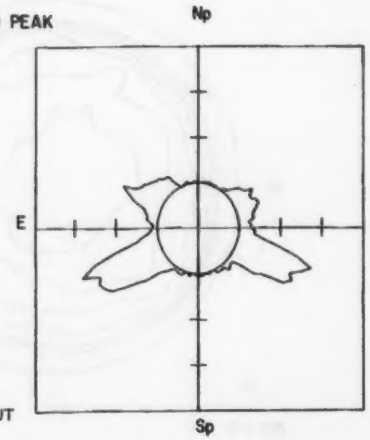
FEBRUARY 15, 1977 (P=-17.41, B_0=-6.84, L_0=125.35)

LOCKHEED
X-RAY (2-14 keV)
OSO-8



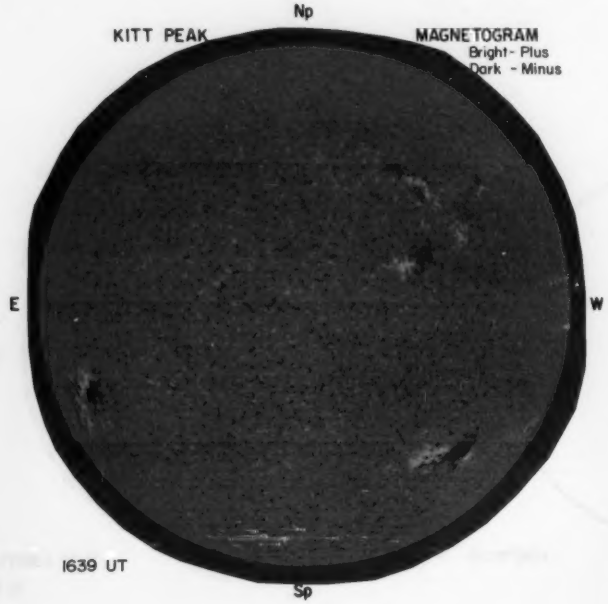
0400 UT
T (10^6 K), EM (10^{48} cm^{-3})

SACRAMENTO PEAK
CORONA (1.15 $R_\odot$)
5303 Å



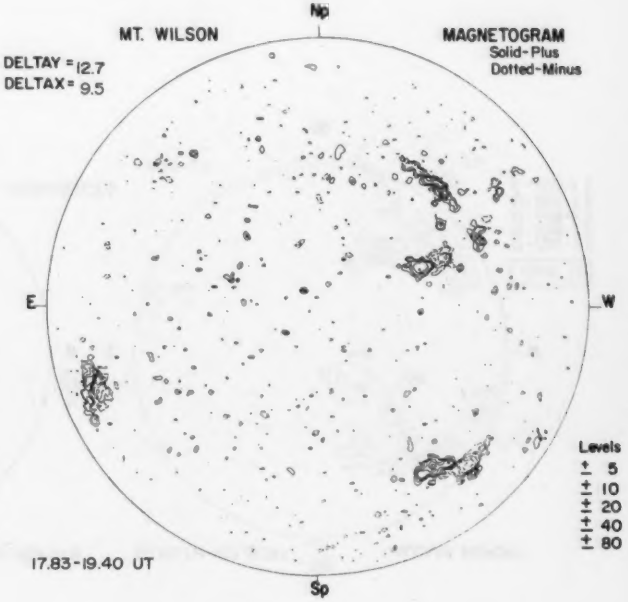
1628 UT

KITT PEAK
MAGNETOGRAM
Bright - Plus
Dark - Minus



1639 UT

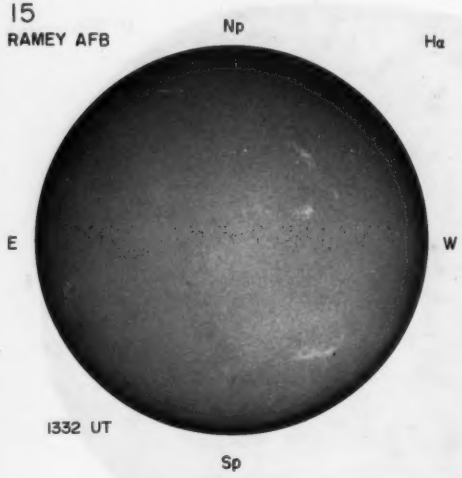
MT. WILSON
MAGNETOGRAM
Solid - Plus
Dotted - Minus
DELTAY = 12.7
DELTAX = 9.5



17.83-19.40 UT

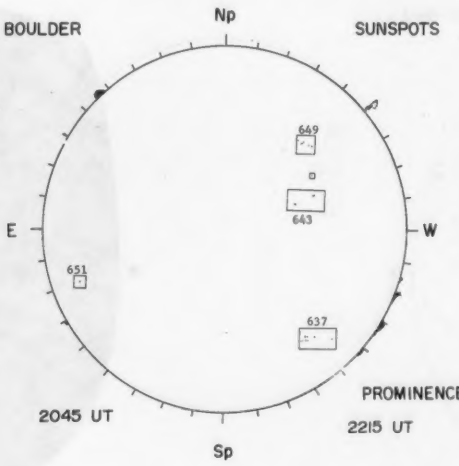
15

RAMEY AFB



1332 UT

Hα BOULDER



2045 UT

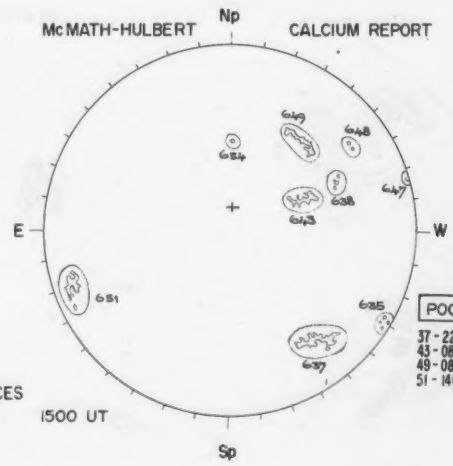
SUNSPOTS

PROMINENCES

2215 UT

McMATH-HULBERT

CALCIUM REPORT

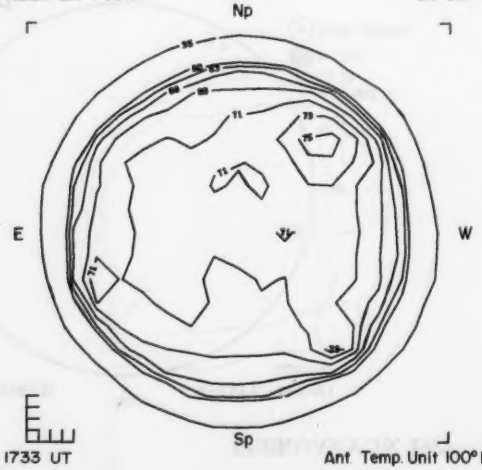


1500 UT

POOR	M

37 - 2200 - 3.5
43 - 0800 - 3.0
49 - 0800 - 3.0
51 - 1400 - 3.0

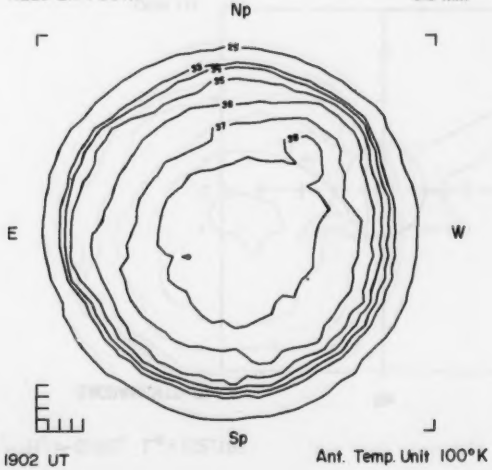
NELC LA POSTA 2.0 CM



1733 UT

Ant. Temp. Unit 100°K

NELC LA POSTA 8.6 MM



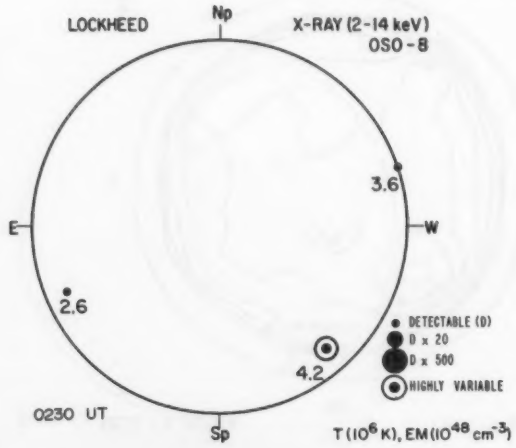
1902 UT

Ant. Temp. Unit 100°K

57
Feb 77

FEBRUARY 16, 1977 (P = -17.74, B_o = -6.88, L_o = 112.18)

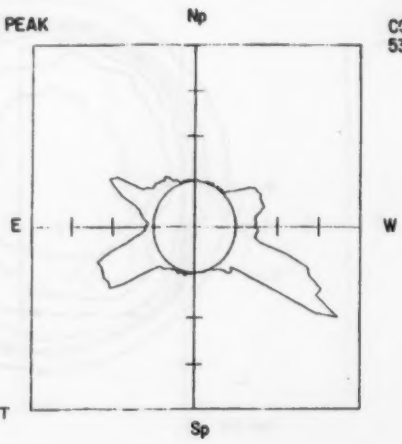
LOCKHEED X-RAY (2-14 keV) OSO-8



0230 UT

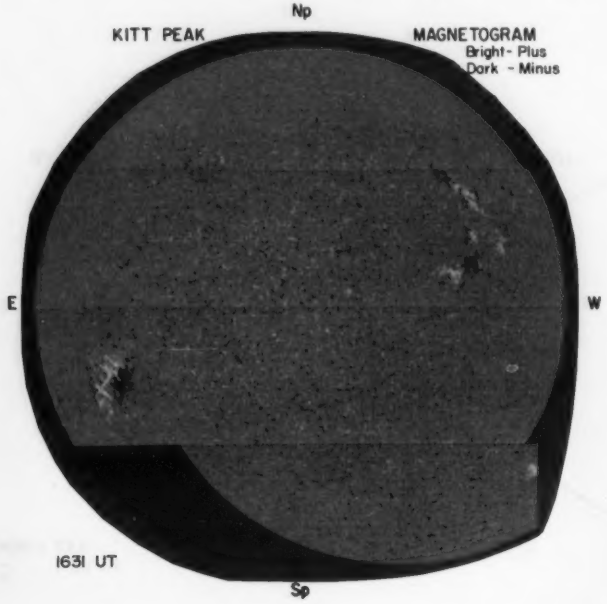
T (10^6 K), EM (10^{48} cm^{-3})

SACRAMENTO PEAK CORONA (1.15 $R_\odot$) 5303 Å



1759 UT

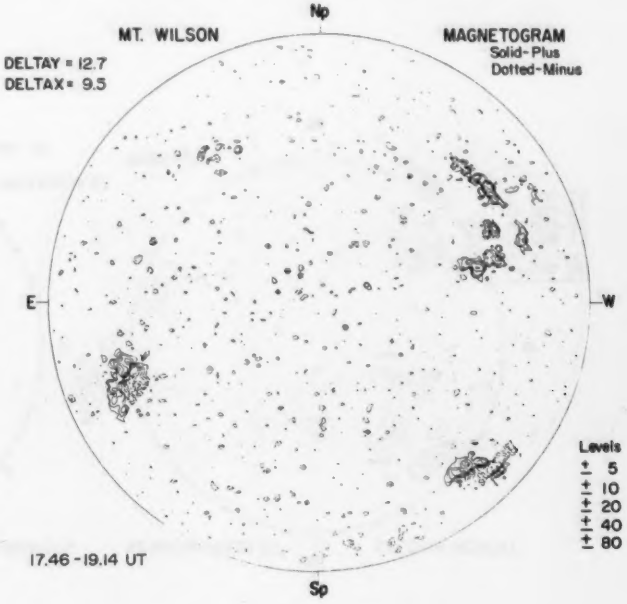
KITT PEAK MAGNETOGRAM
Bright - Plus
Dark - Minus



1631 UT

MT. WILSON MAGNETOGRAM
Solid - Plus
Dotted - Minus

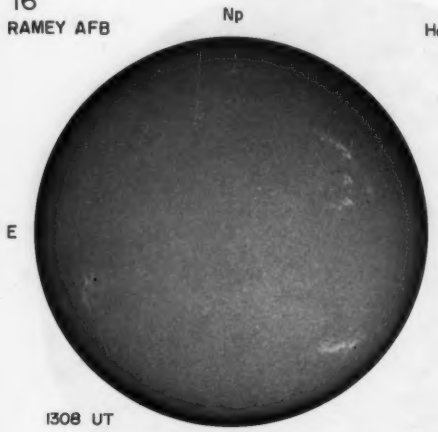
DELTAY = 12.7
DELTAX = 9.5



17.46 - 19.14 UT

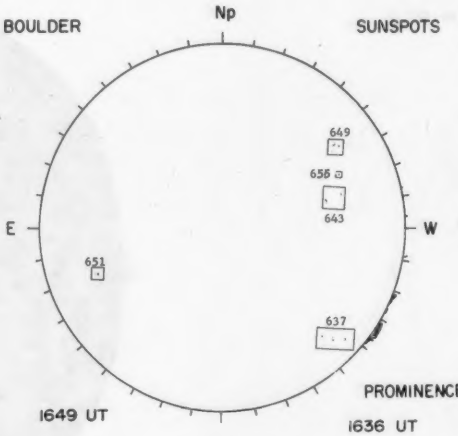
16

RAMEY AFB



1308 UT

Hα BOULDER



1649 UT

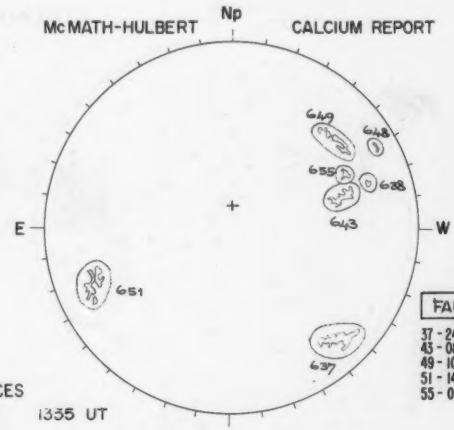
SUNSPOTS

PROMINENCES

1636 UT

McMATH-HULBERT

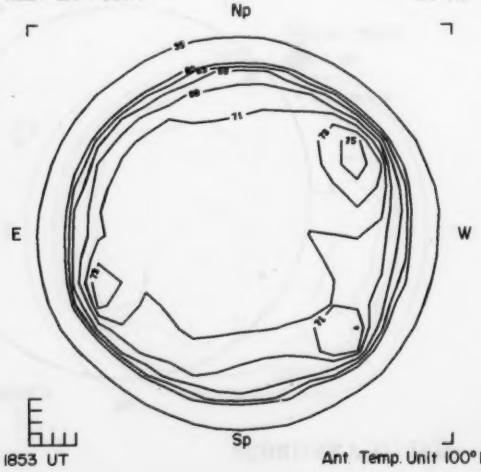
CALCIUM REPORT



1335 UT

FAIR	M
37 - 2400 - 3.5	
43 - 0800 - 3.0	
49 - 1000 - 3.0	
51 - 1400 - 3.0	
55 - 0400 - 3.0	

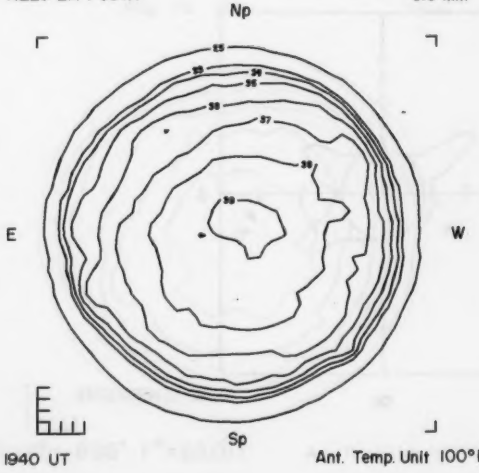
NELC LA POSTA 2.0 CM



1853 UT

Ant. Temp. Unit 100°K

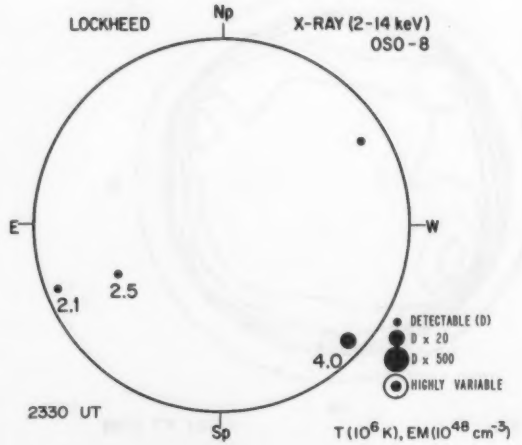
NELC LA POSTA 8.6 MM

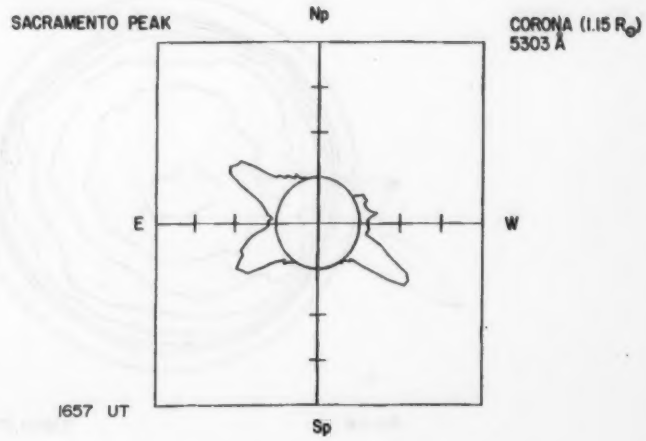


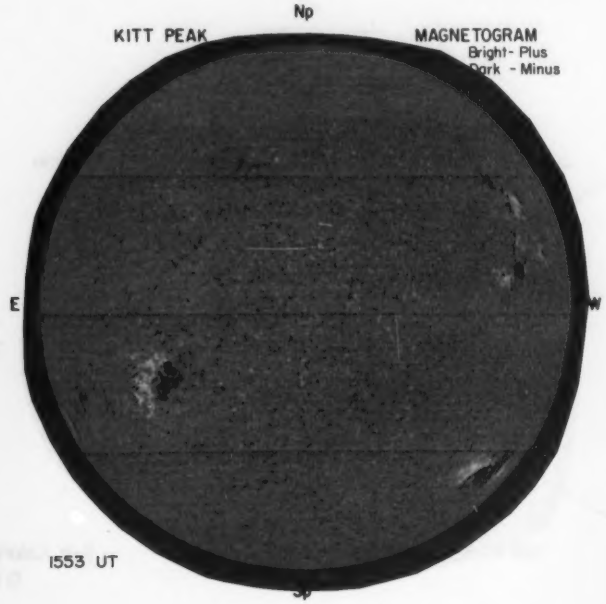
1940 UT

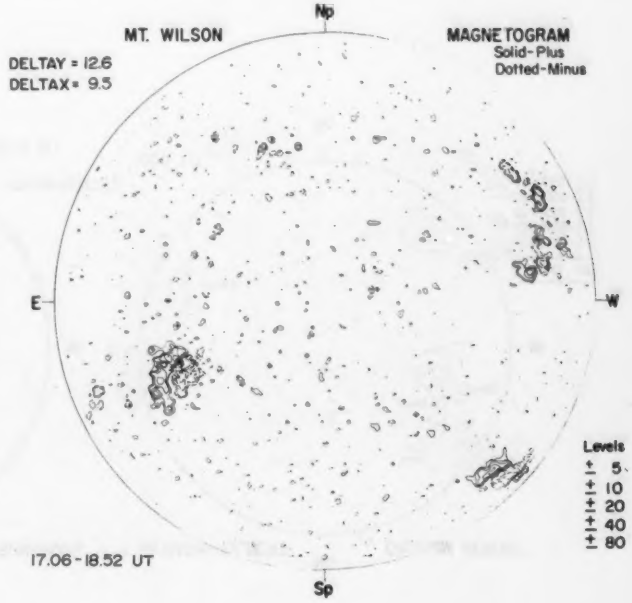
Ant. Temp. Unit 100°K

FEBRUARY 17, 1977 (P = -18.07, B_o = -6.92, L_o = 99.01)



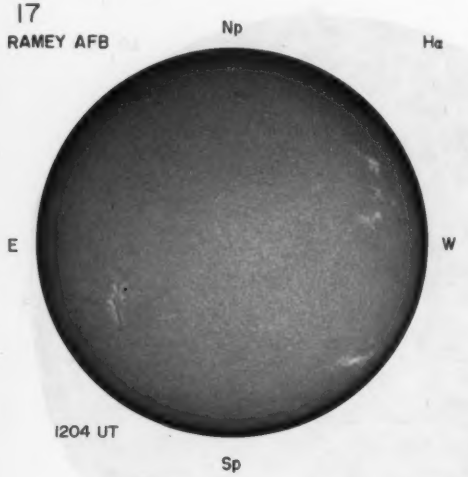






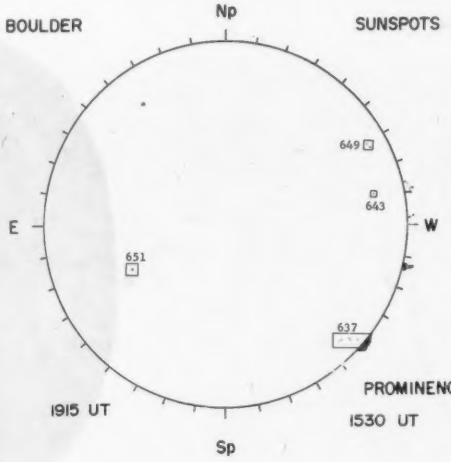
17

RAMEY AFB



1204 UT

BOULDER SUNSPOTS

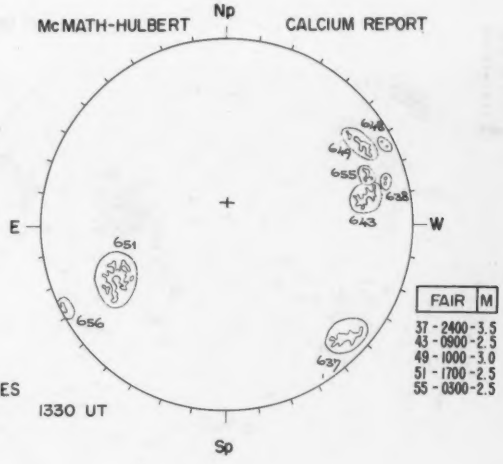


1915 UT

PROMINENCES

1530 UT

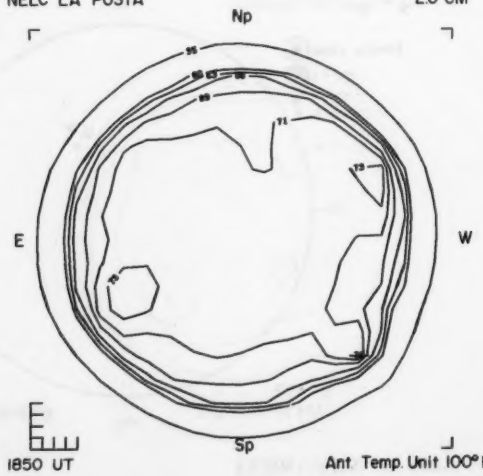
McMATH-HULBERT CALCIUM REPORT



1330 UT

FAIR	M
37 - 2400 - 3.5	
43 - 0900 - 2.5	
49 - 1000 - 3.0	
51 - 1700 - 2.5	
55 - 0300 - 2.5	

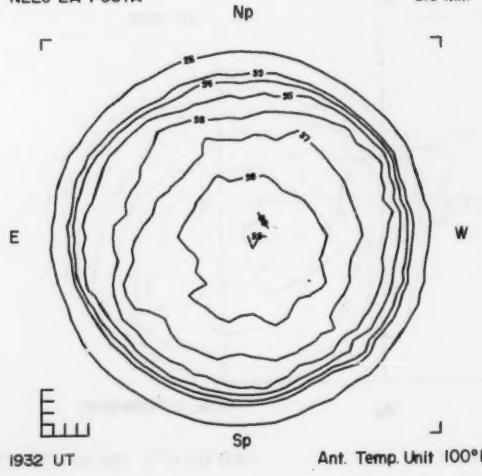
NELC LA POSTA 2.0 CM



1850 UT

Ant. Temp. Unit 100°K

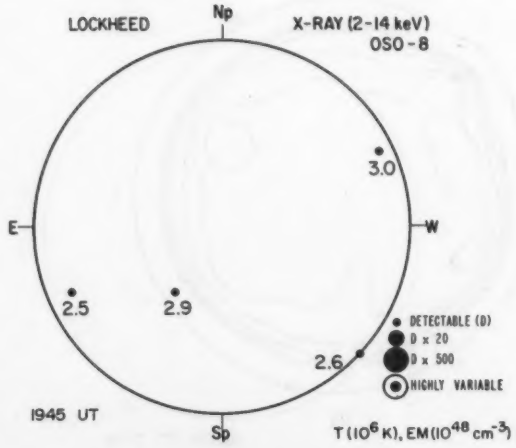
NELC LA POSTA 8.6 MM

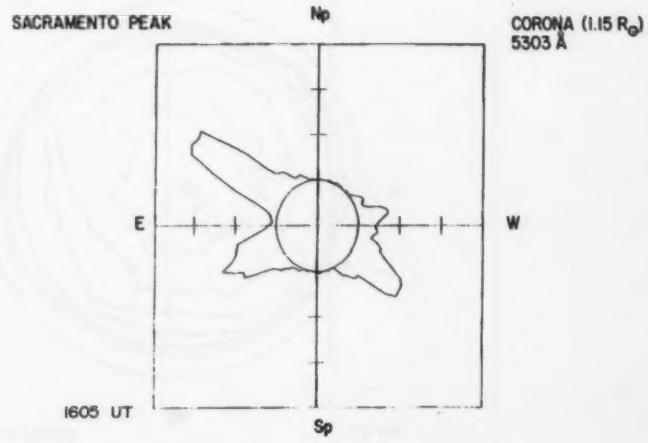


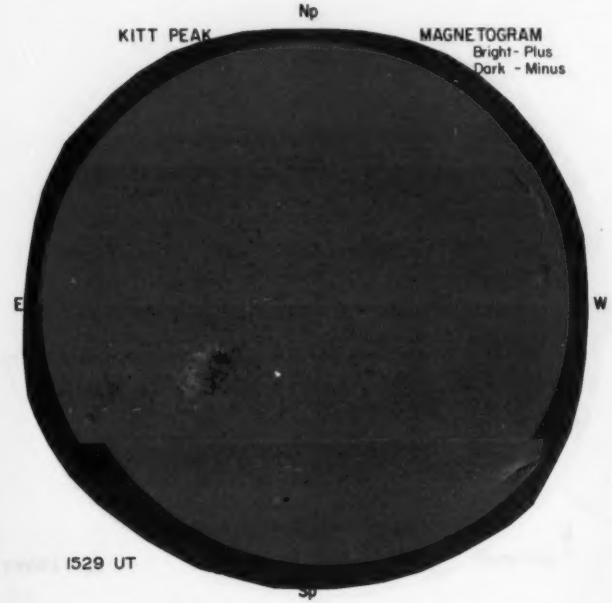
1932 UT

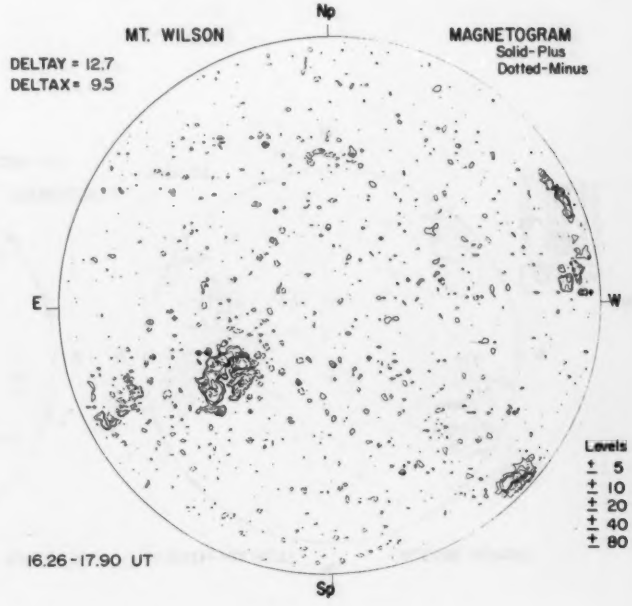
Ant. Temp. Unit 100°K

FEBRUARY 18, 1977 (P =-18.40, B_o =-6.96, L_o =85.84)



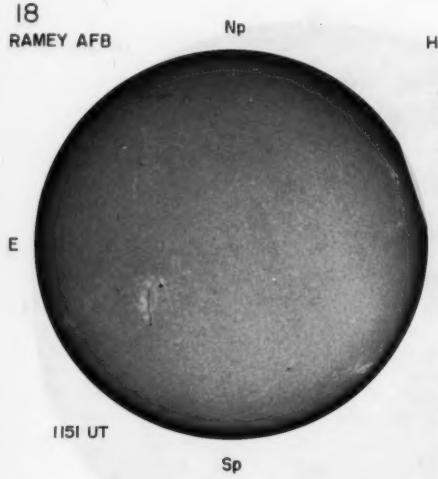






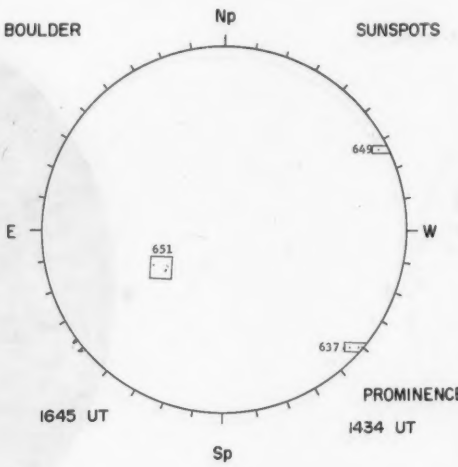
18

RAMEY AFB



1151 UT

Hα BOULDER



1645 UT

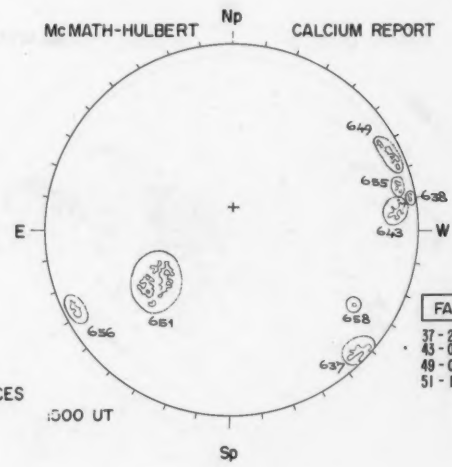
SUNSPOTS

PROMINENCES

1434 UT

McMATH-HULBERT

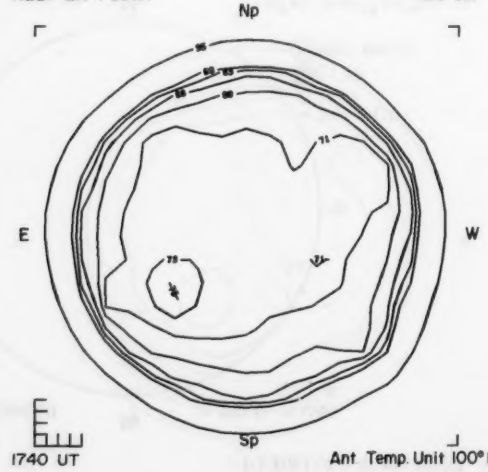
CALCIUM REPORT



1500 UT

FAIR	M
37 - 2400-3.5	
43 - 0900-2.5	
49 - 0900-3.0	
51 - 1900-2.5	

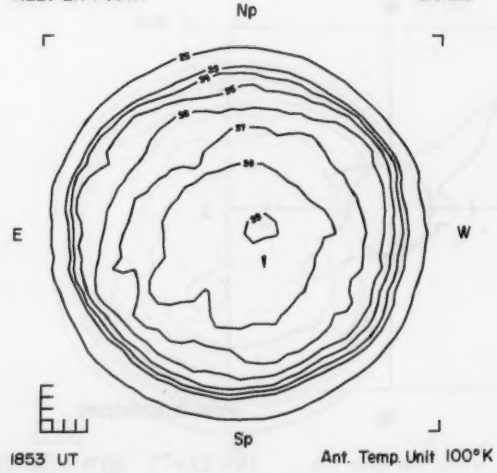
NELC LA POSTA 2.0 CM



1740 UT

Ant. Temp. Unit 100°K

NELC LA POSTA 8.6 MM



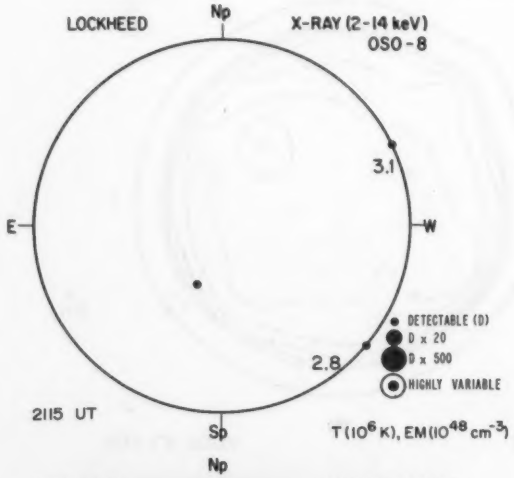
1853 UT

Ant. Temp. Unit 100°K

FEBRUARY 19, 1977 (P = -18.71, B_o = -6.99, L_o = 72.68)

LOCKHEED

X-RAY (2-14 keV)
OSO-8

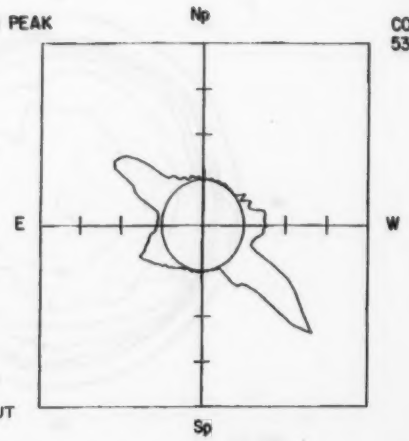


2115 UT

T(10^6 K), EM(10^{48} cm^{-3})

SACRAMENTO PEAK

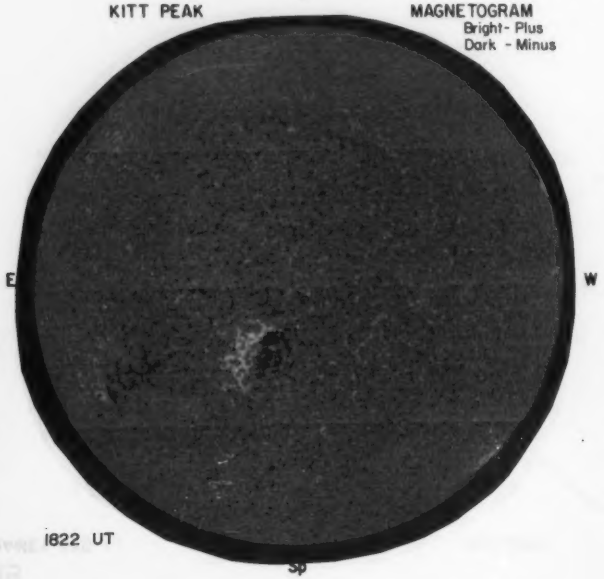
CORONA (1.15 $R_\odot$)
5303 Å



1603 UT

KITT PEAK

MAGNETOGRAM
Bright - Plus
Dark - Minus

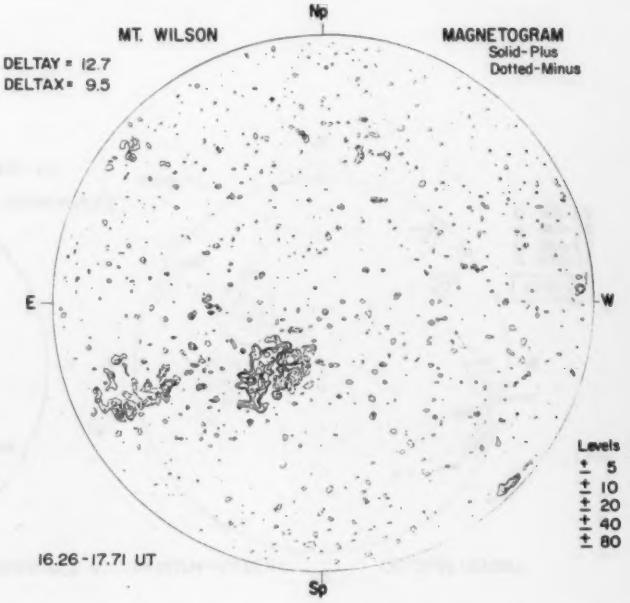


1822 UT

MT. WILSON

MAGNETOGRAM
Solid - Plus
Dotted - Minus

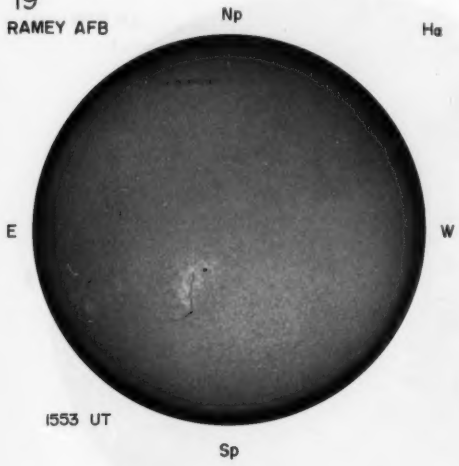
DELTAY = 12.7
DELTAX = 9.5



16.26 - 17.71 UT

19

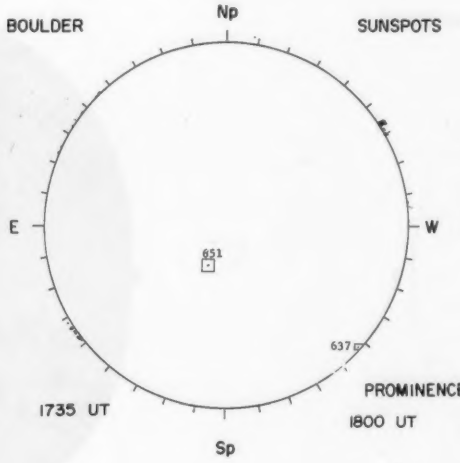
RAMEY AFB



1553 UT

Ha

BOULDER



1735 UT

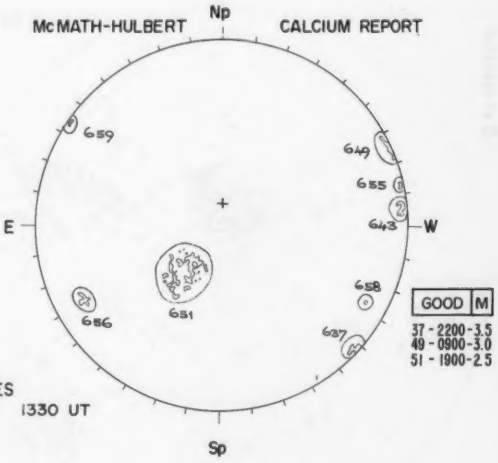
SUNSPOTS

PROMINENCES

1800 UT

McMATH-HULBERT

CALCIUM REPORT



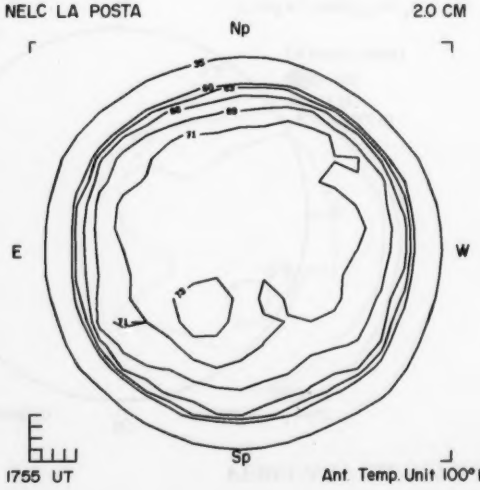
1330 UT

GOOD | M

37 - 2200 - 3.5
49 - 0900 - 3.0
51 - 1900 - 2.5

NELC LA POSTA

2.0 CM

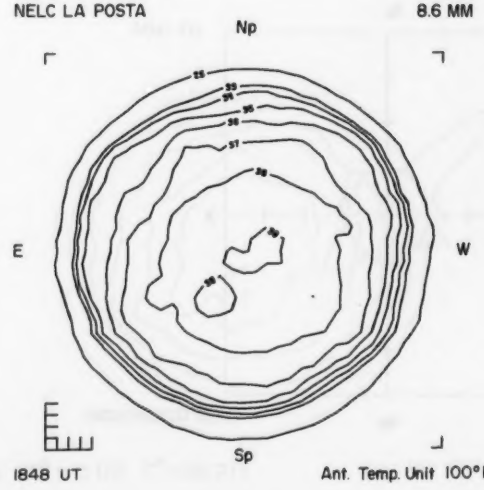


1755 UT

Ant. Temp. Unit 100°K

NELC LA POSTA

8.6 MM

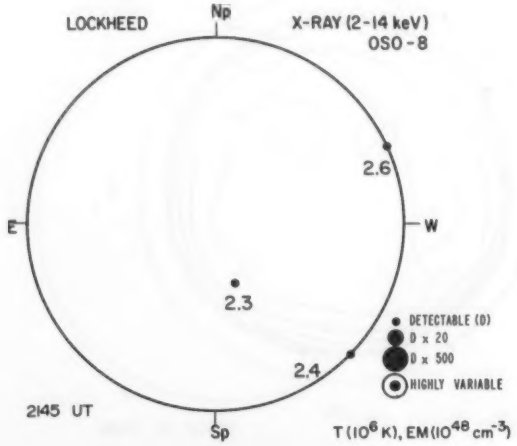


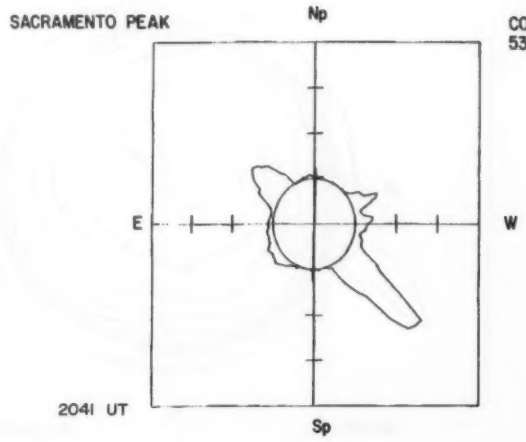
1848 UT

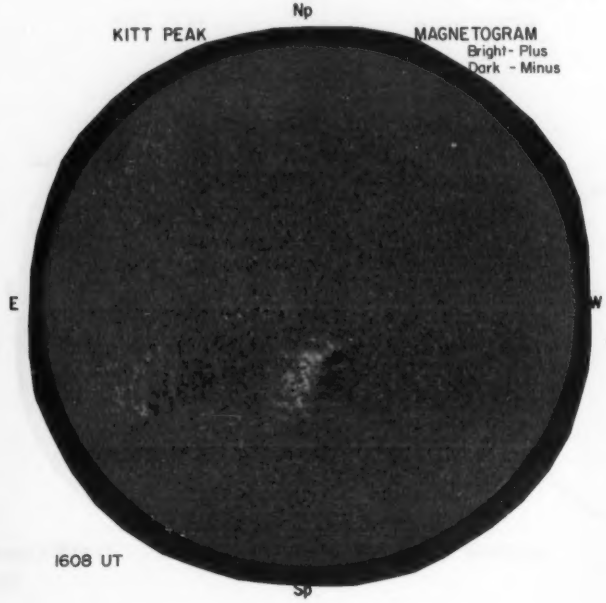
Ant. Temp. Unit 100°K

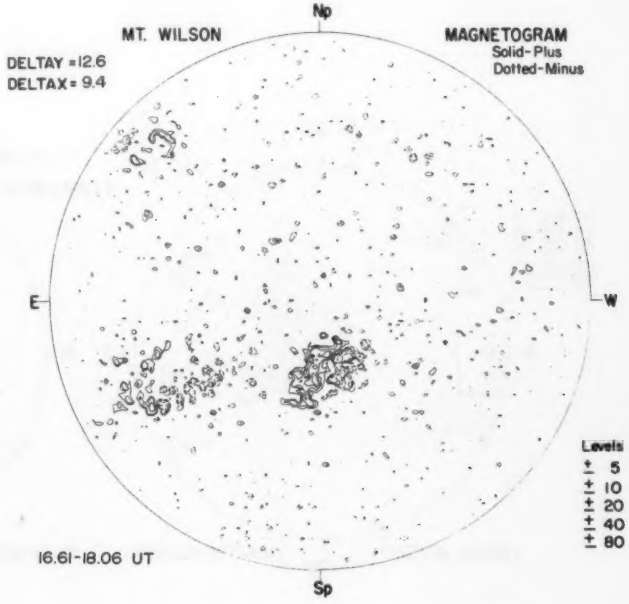
65
Feb 77

FEBRUARY 20, 1977 (P = -19.02, B_0 = -7.03, L_0 = 59.51)



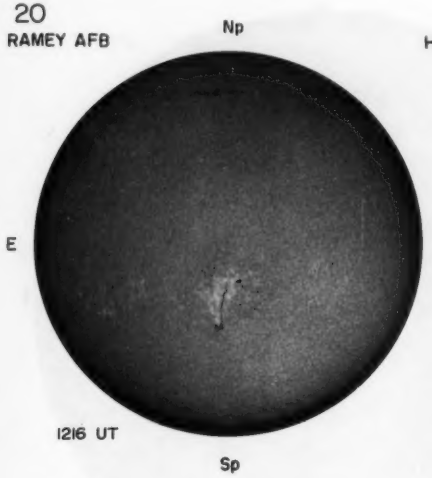






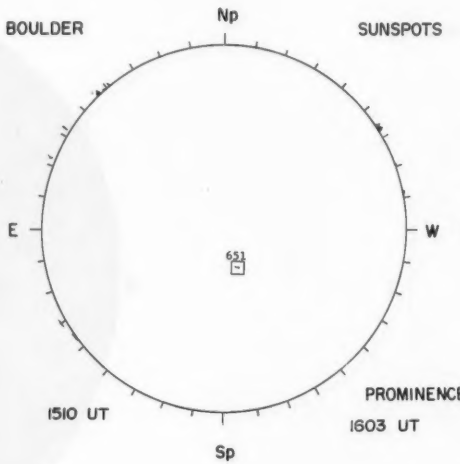
20

RAMEY AFB



1216 UT

Hα BOULDER



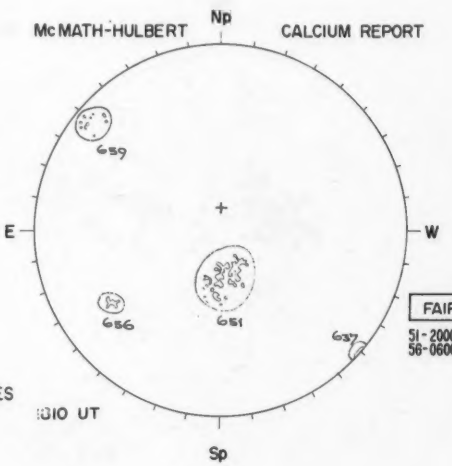
1510 UT

SUNSPOTS

PROMINENCES

1603 UT

McMATH-HULBERT



1810 UT

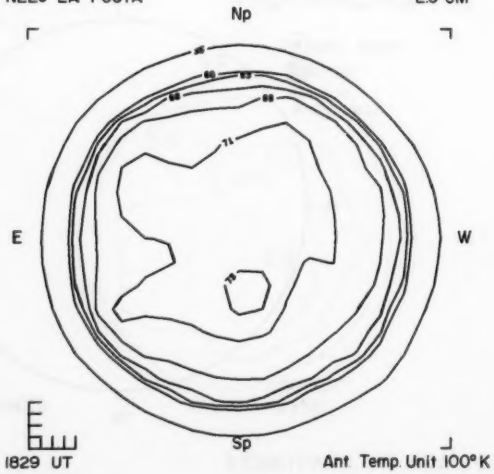
CALCIUM REPORT

FAIR M

51-2000-2.5

56-0600-2.5

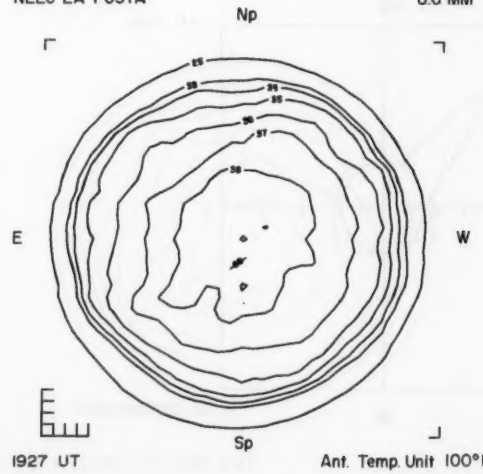
NELC LA POSTA 2.0 CM



1829 UT

Ant. Temp. Unit 100°K

NELC LA POSTA 8.6 MM

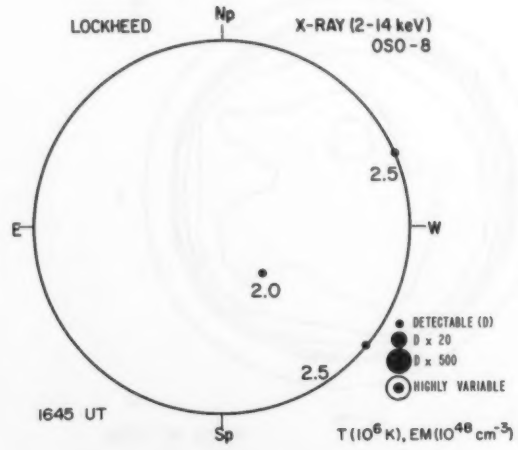


1927 UT

Ant. Temp. Unit 100°K

FEBRUARY 21, 1977 (P=-19.33, B_o=-7.06, L_o=46.34)

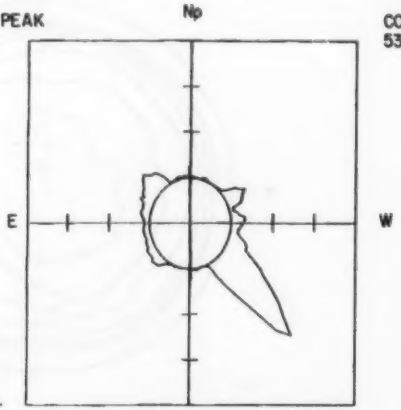
LOCKHEED
X-RAY (2-14 keV)
OSO-8



1645 UT

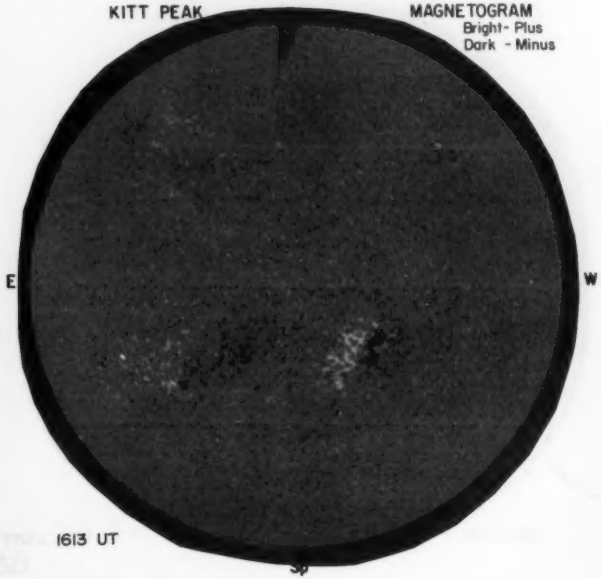
T (10^6 K), EM (10^{48} cm^{-3})

SACRAMENTO PEAK
CORONA (1.15 $R_\odot$)
5303 Å



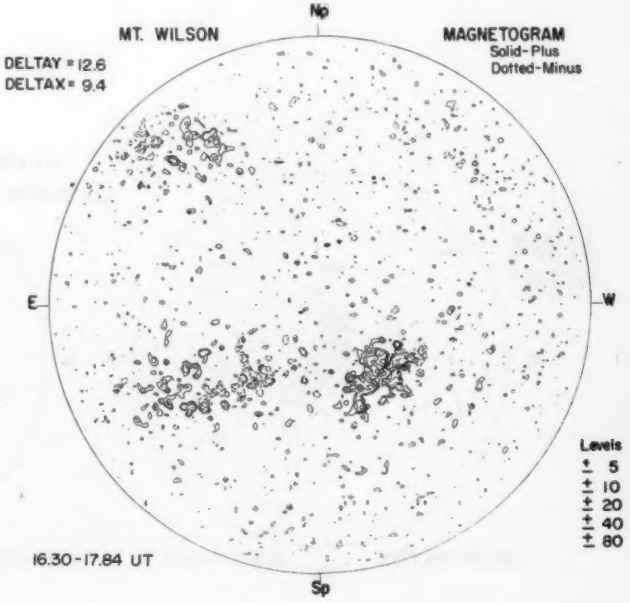
1534 UT

KITT PEAK
MAGNETOGRAM
Bright - Plus
Dark - Minus



1613 UT

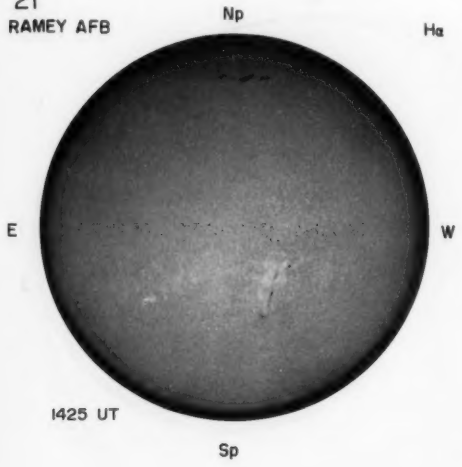
MT. WILSON
MAGNETOGRAM
Solid - Plus
Dotted - Minus
DELTAY = 12.6
DELTAX = 9.4



16.30-17.84 UT

21

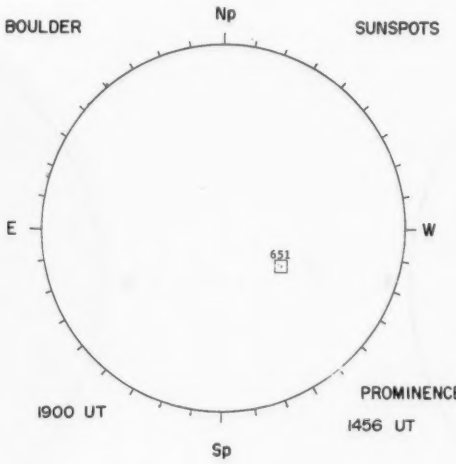
RAMEY AFB



1425 UT

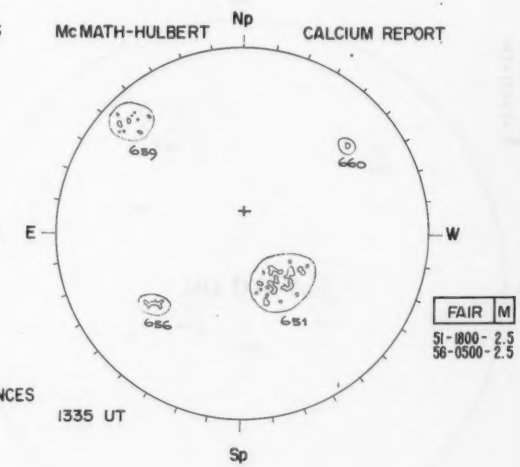
Hα

BOULDER



1900 UT

SUNSPOTS



1335 UT

McMATH-HULBERT

CALCIUM REPORT

FAIR | M

51 - 1800 - 2.5

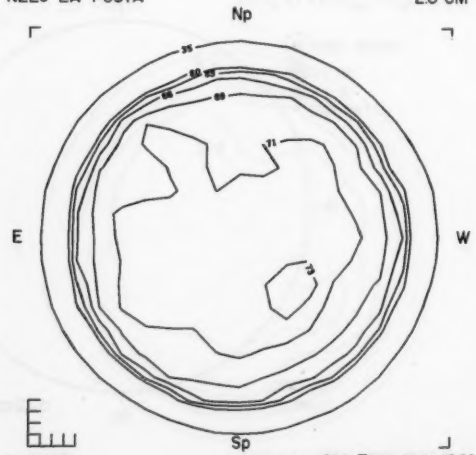
56 - 0500 - 2.5

PROMINENCES

1456 UT

NELC LA POSTA

2.0 CM

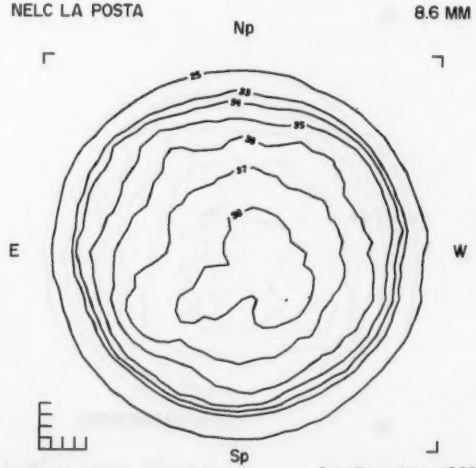


1941 UT

Ant. Temp. Unit 100°K

NELC LA POSTA

8.6 MM



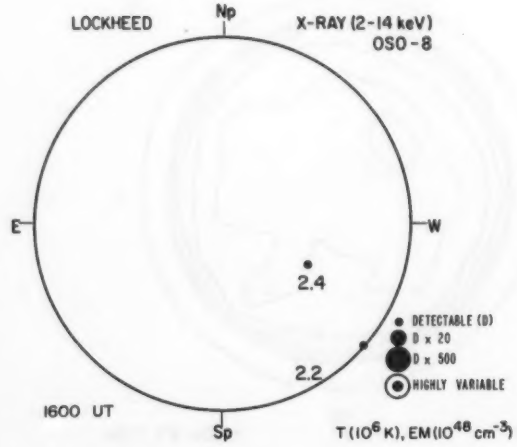
1817 UT

Ant. Temp. Unit 100°K

FEBRUARY 22, 1977 (P = -19.63, B_o = -7.09, L_o = 33.17)

LOCKHEED

X-RAY (2-14 keV)
OSO-8

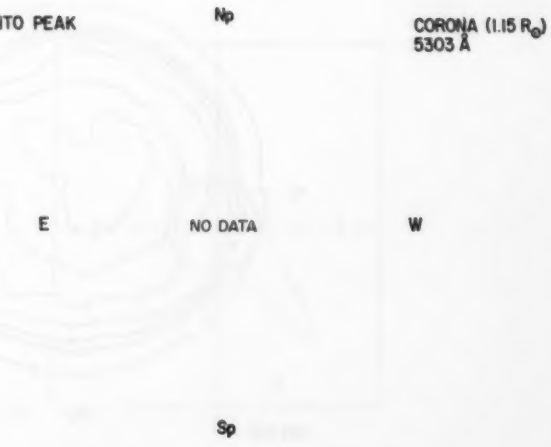


1600 UT

T (10^6 K), EM (10^{48} cm^{-3})

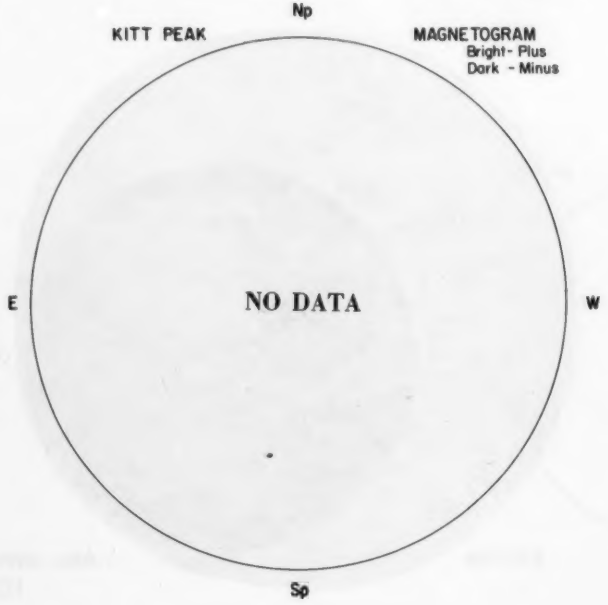
SACRAMENTO PEAK

CORONA (1.15 $R_\odot$)
5303 Å



KITT PEAK

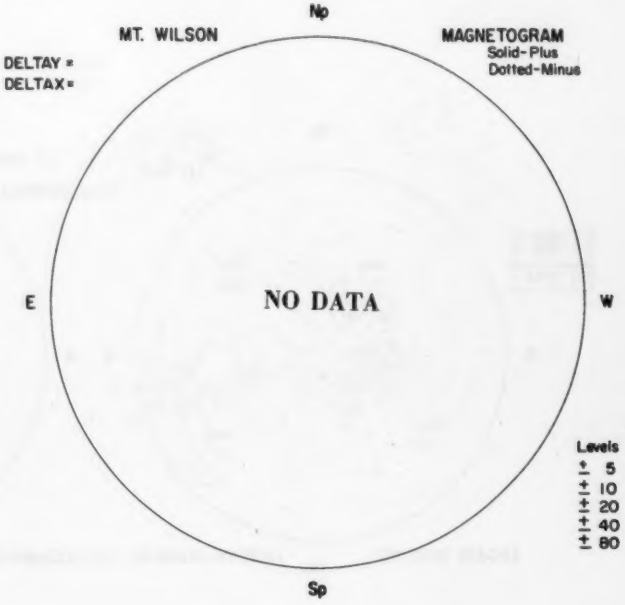
MAGNETOGRAM
Bright - Plus
Dark - Minus



MT. WILSON

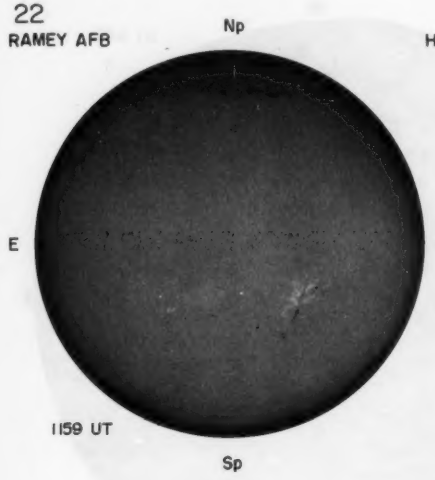
DELTAY =
DELTAX =

MAGNETOGRAM
Solid - Plus
Dotted - Minus



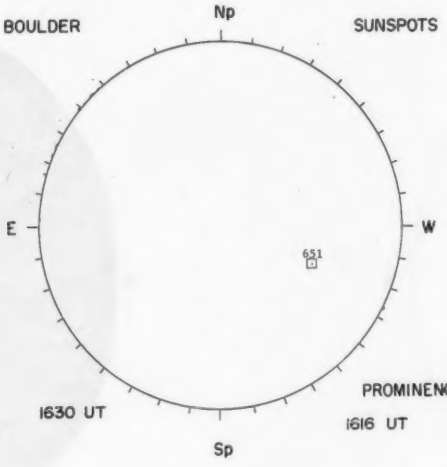
22

RAMEY AFB



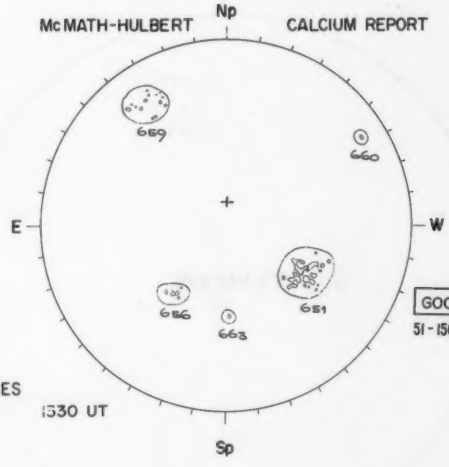
1159 UT

BOULDER



1630 UT

McMATH-HULBERT

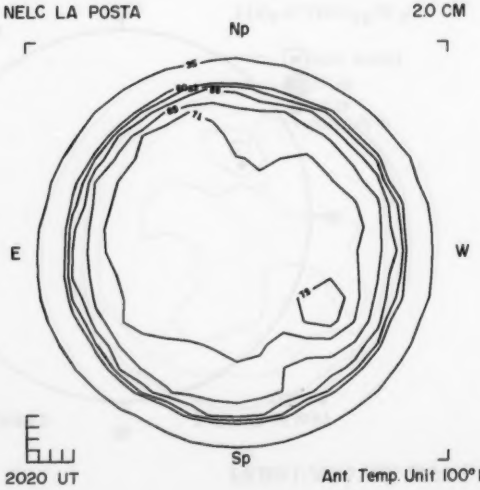


1330 UT

PROMINENCES

1616 UT

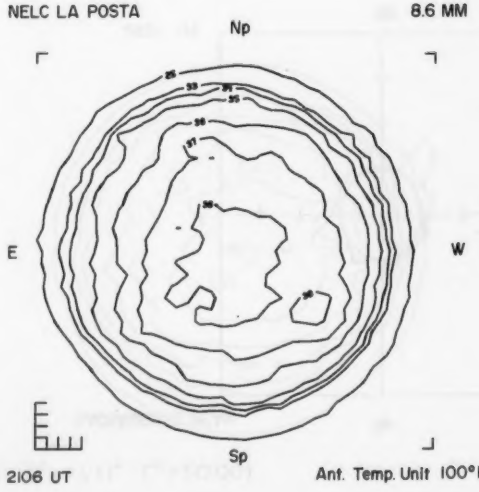
NELC LA POSTA



2020 UT

Ant. Temp. Unit 100°K

NELC LA POSTA



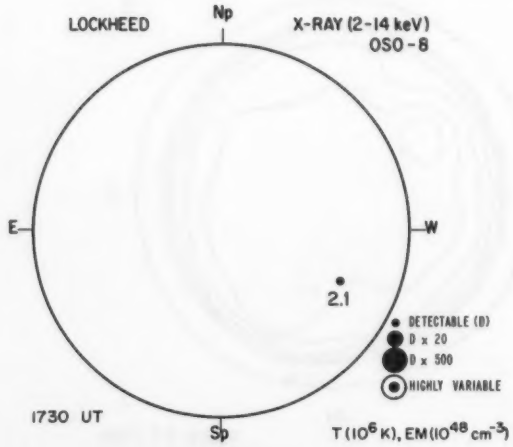
2106 UT

Ant. Temp. Unit 100°K

71
Feb 77

FEBRUARY 23, 1977 (P = -19.92, B_o = -7.11, L_o = 20.00)

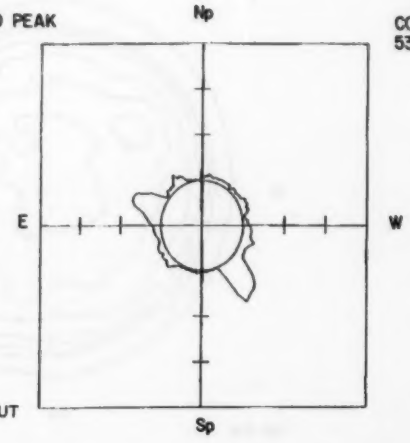
LOCKHEED
X-RAY (2-14 keV)
OSO-8



1730 UT

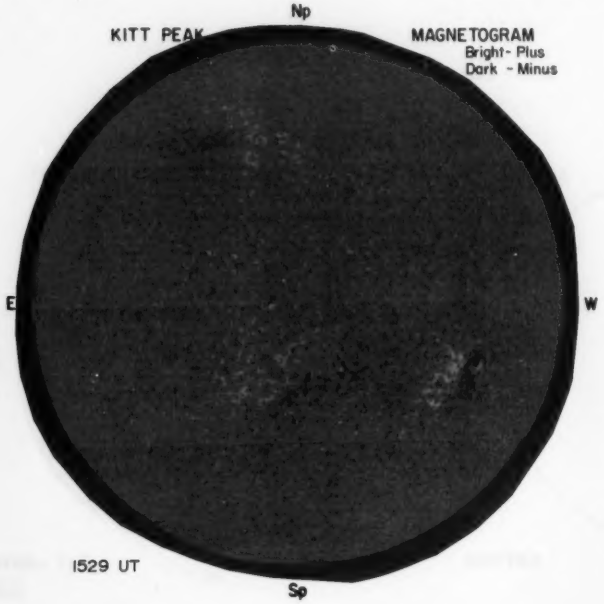
T (10^6 K), EM (10^{48} cm^{-3})

SACRAMENTO PEAK
CORONA (1.15 $R_\odot$)
5303 Å



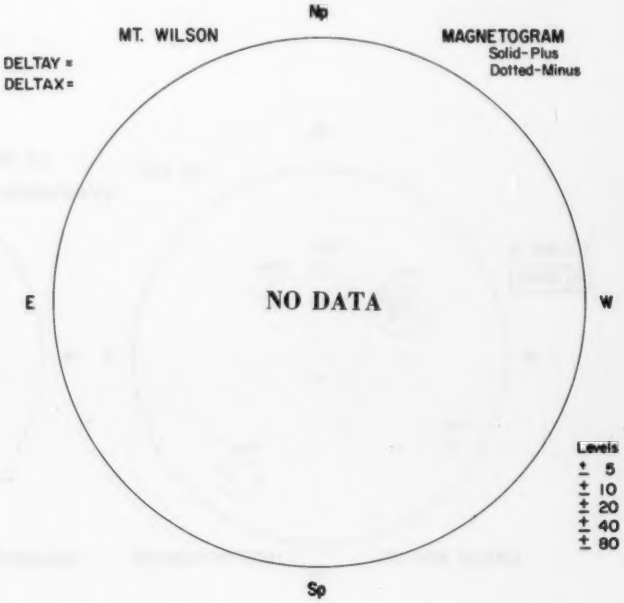
2227 UT

KITT PEAK
MAGNETOGRAM
Bright - Plus
Dark - Minus



1529 UT

MT. WILSON
MAGNETOGRAM
Solid - Plus
Dotted - Minus
DELTAY =
DELTAX =

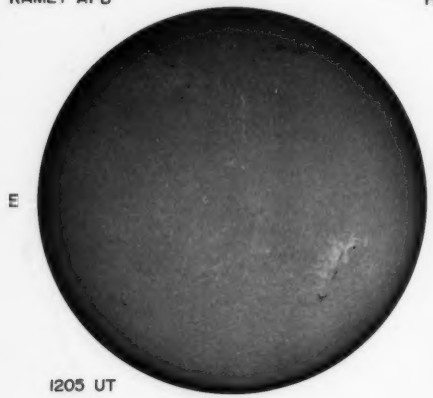


23

RAMEY AFB

Np

Hα



E W

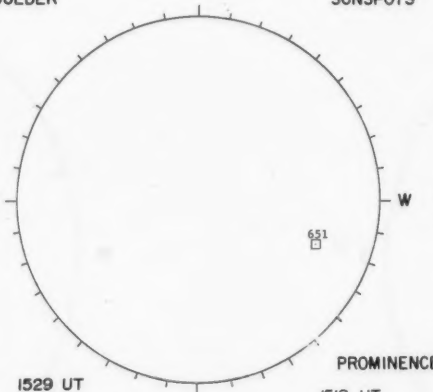
1205 UT

Sp

BOULDER

Np

SUNSPOTS



E W

1529 UT

Sp

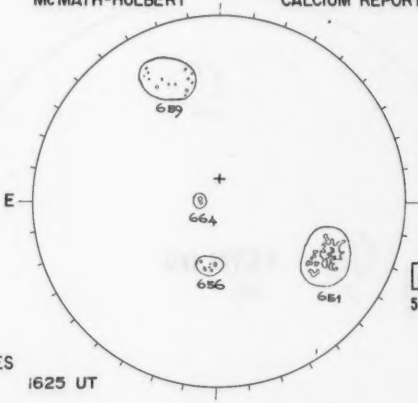
PROMINENCES

1518 UT

McMATH-HULBERT

Np

CALCIUM REPORT



E W

GOOD | M

51 - 1500 - 2.5

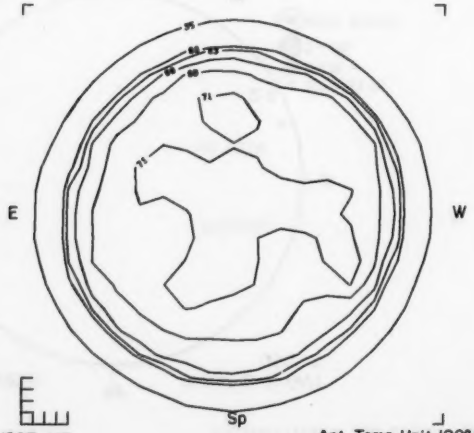
1625 UT

Sp

NELC LA POSTA

2.0 CM

Np



E W

1807 UT

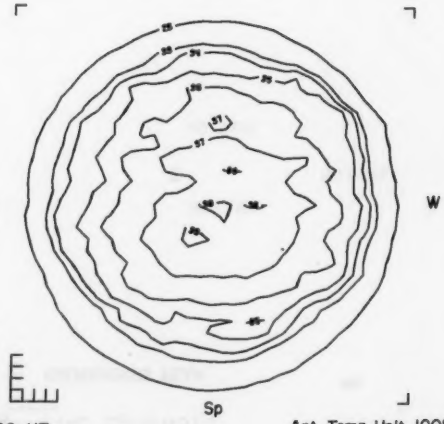
Sp

Ant. Temp. Unit 100°K

NELC LA POSTA

8.6 MM

Np



E W

1906 UT

Sp

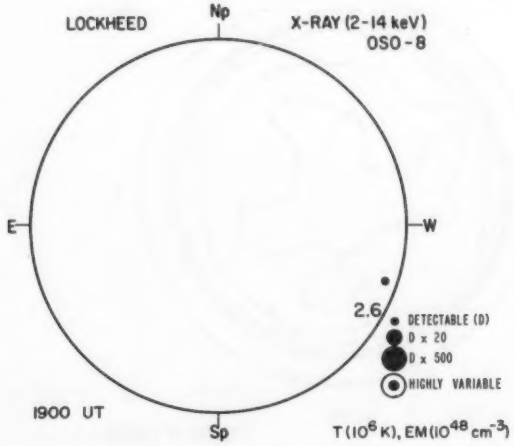
Ant. Temp. Unit 100°K

73
Feb 77

FEBRUARY 24, 1977 (P = -20.21, B_0 = -7.14, L_0 = 6.83)

LOCKHEED

X-RAY (2-14 keV)
OSO-8



1900 UT

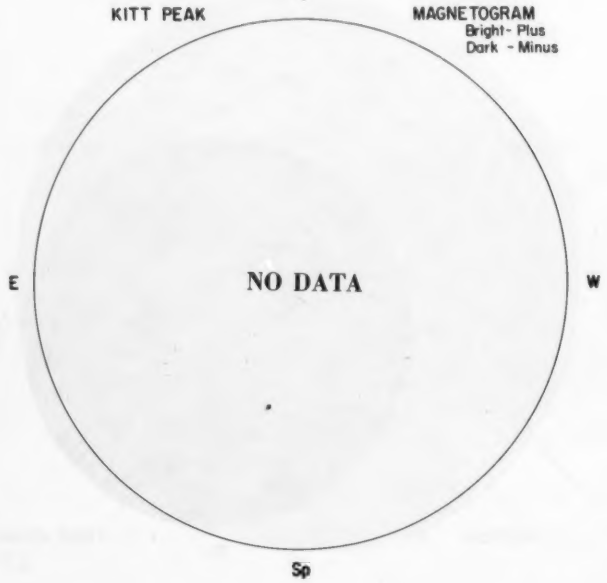
T (10^6 K), EM (10^{48} cm^{-3})

SACRAMENTO PEAK

CORONA (1.15 $R_\odot$)
5303 Å

KITT PEAK

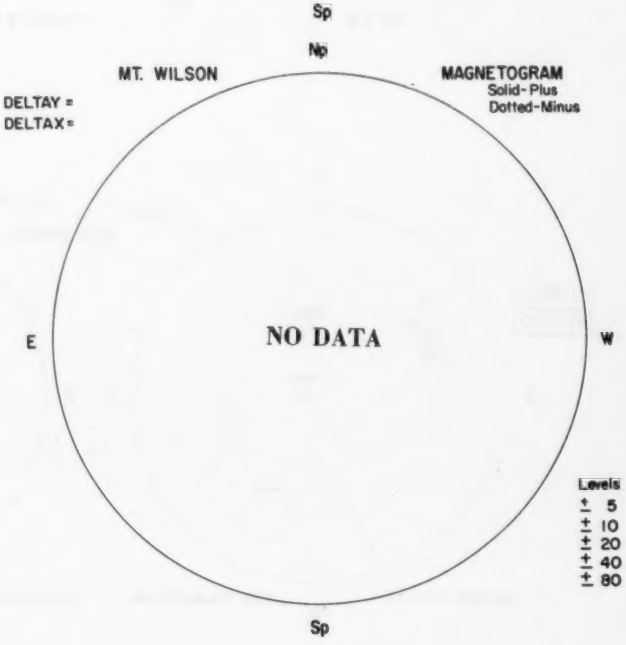
MAGNETOGRAM
Bright - Plus
Dark - Minus



MT. WILSON

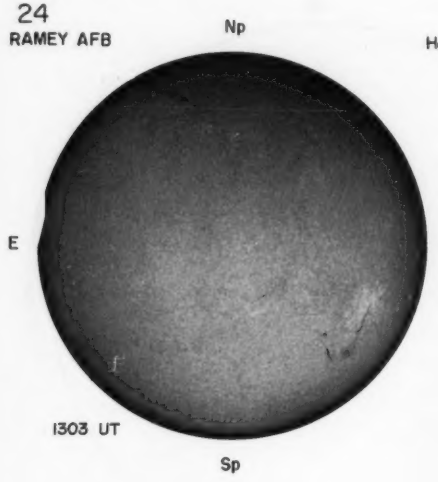
DELTAY =
DELTAX =

MAGNETOGRAM
Solid - Plus
Dotted - Minus



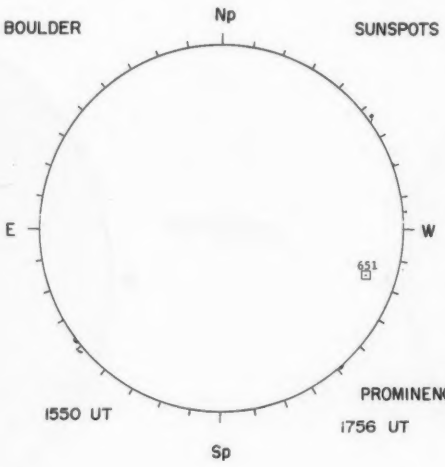
24

RAMEY AFB



1303 UT

Hα BOULDER



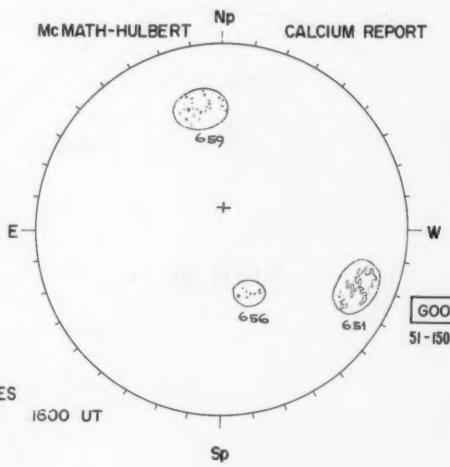
SUNSPOTS

1550 UT

PROMINENCES

1756 UT

McMATH-HULBERT



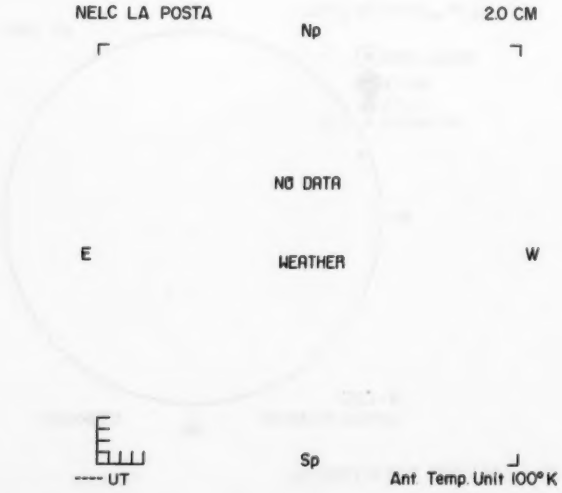
CALCIUM REPORT

GOOD | M

51-1500-2.5

1600 UT

NELC LA POSTA



2.0 CM

Ant. Temp. Unit 100°K

---- UT

NELC LA POSTA

8.6 MM

Ant. Temp. Unit 100°K

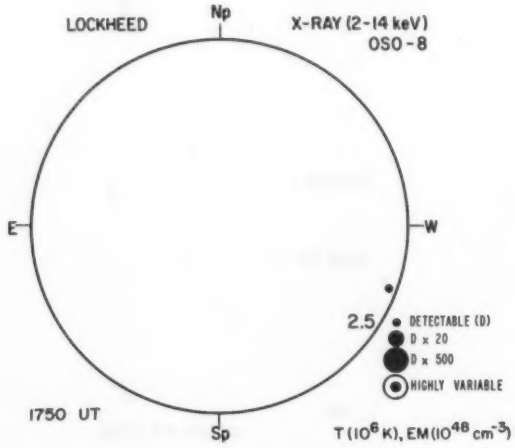
---- UT

75
Feb 77

FEBRUARY 25, 1977 (P = -20.49, B_0 = -7.16, L_0 = 353.66)

LOCKHEED

X-RAY (2-14 keV)
OSO-8

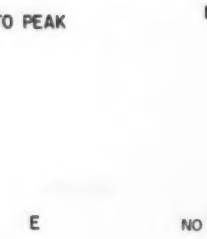


1750 UT

T (10^6 K), EM (10^{48} cm^{-3})

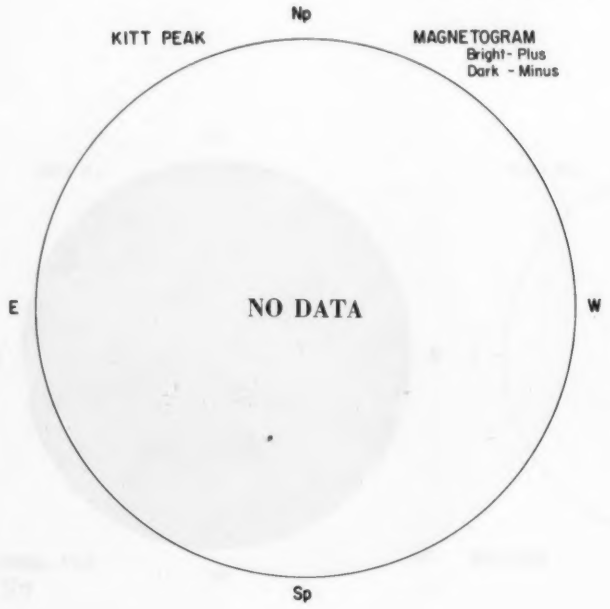
SACRAMENTO PEAK

CORONA (1.15 $R_\odot$)
5303 Å



KITT PEAK

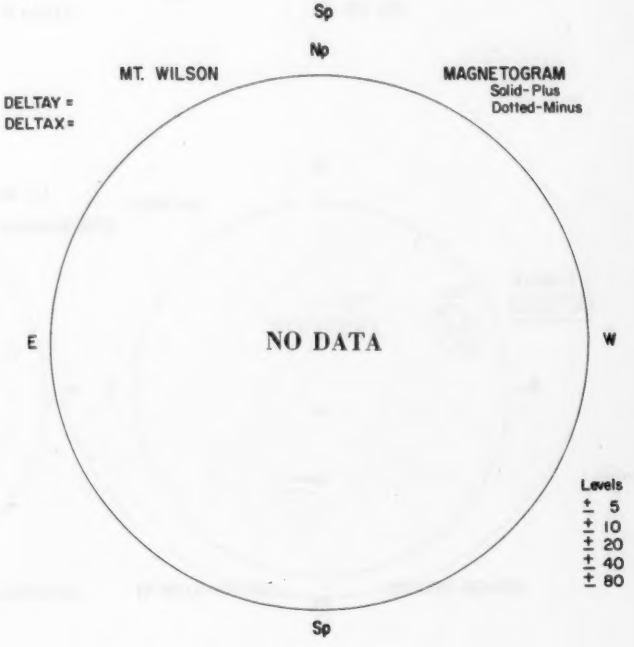
MAGNETOGRAM
Bright - Plus
Dark - Minus



MT. WILSON

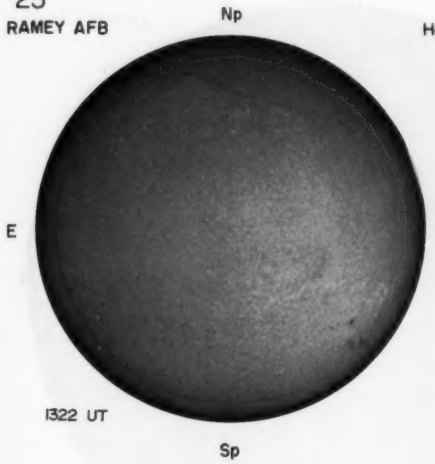
DELTAY =
DELTAX =

MAGNETOGRAM
Solid - Plus
Dotted - Minus



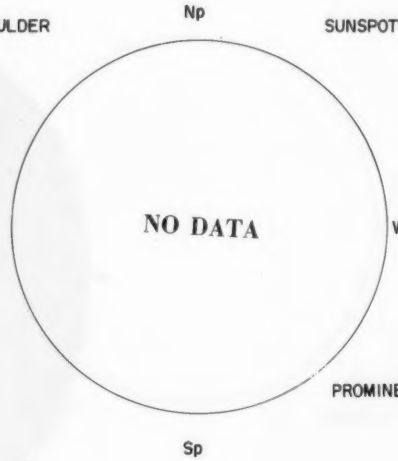
25

RAMEY AFB



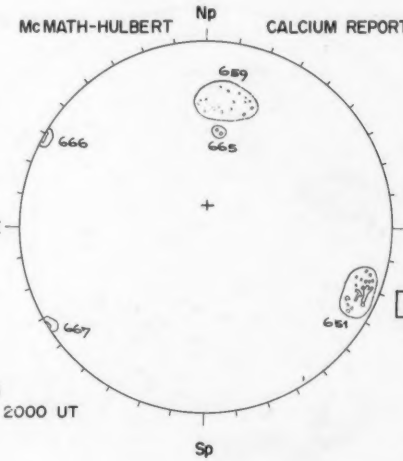
1322 UT

Hα BOULDER



SUNSPOTS

McMATH-HULBERT



2000 UT

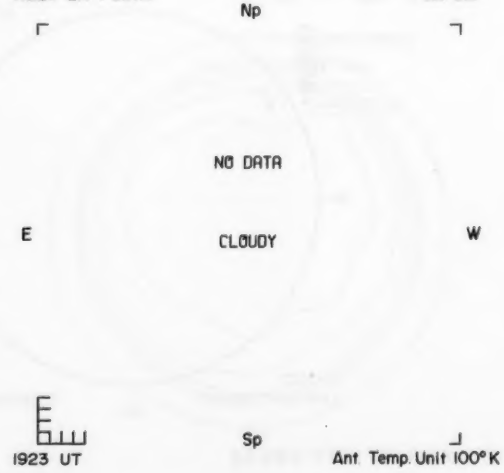
CALCIUM REPORT

FAIR | M

PROMINENCES

NELC LA POSTA

2.0 CM

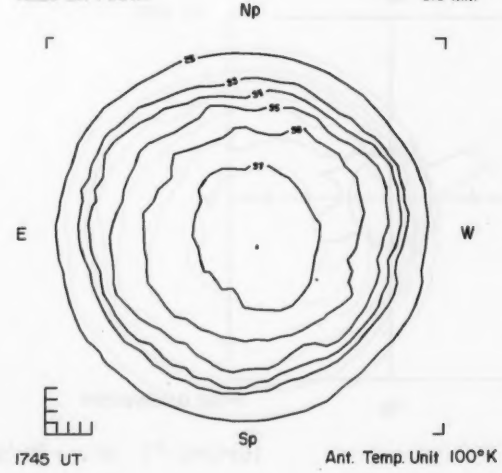


1923 UT

Ant. Temp. Unit 100°K

NELC LA POSTA

8.6 MM

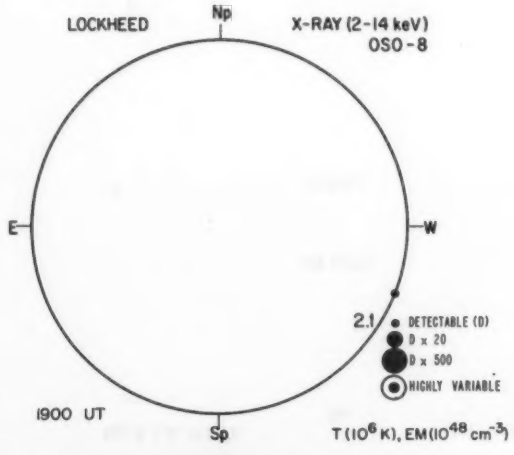


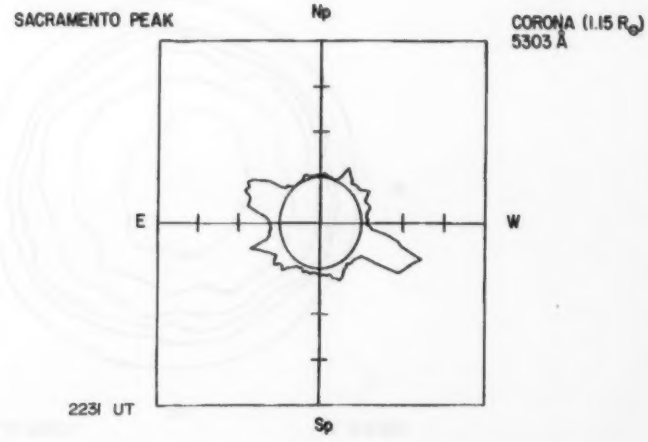
1745 UT

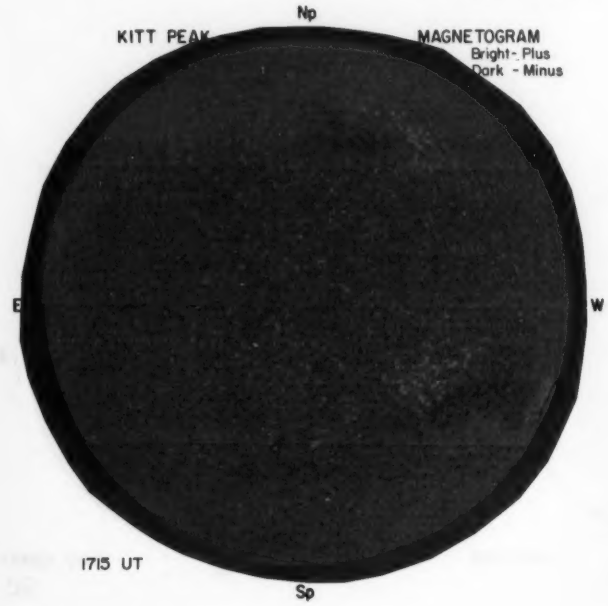
Ant. Temp. Unit 100°K

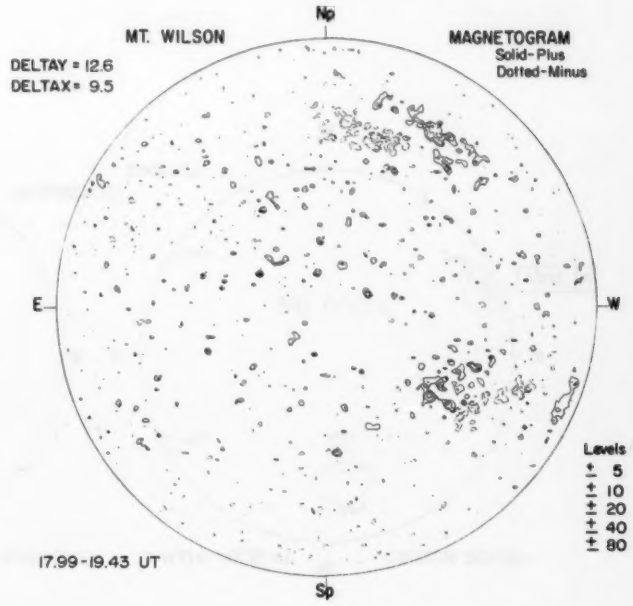
77
Feb 77

FEBRUARY 26, 1977 (P = -20.76, B_o = -7.18, L_o = 340.49)



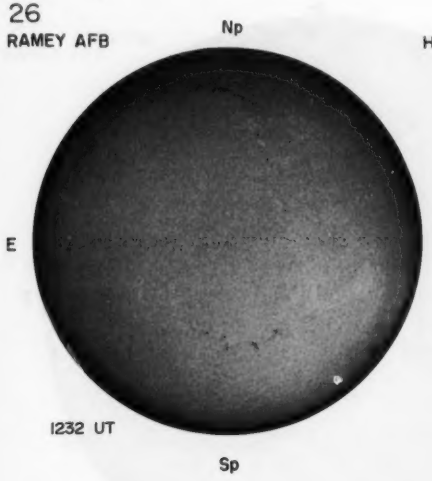






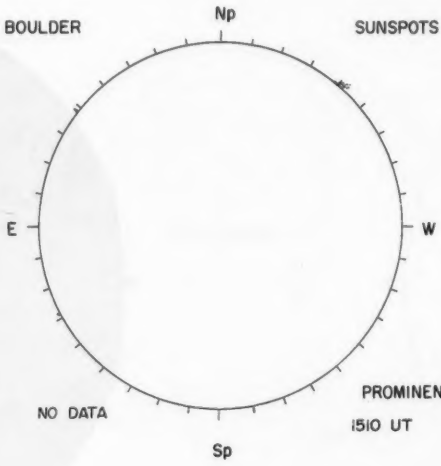
26

RAMEY AFB



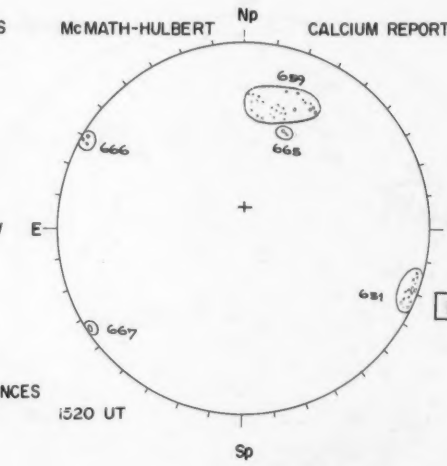
1232 UT

Hα BOULDER



NO DATA

SUNSPOTS



PROMINENCES

1510 UT

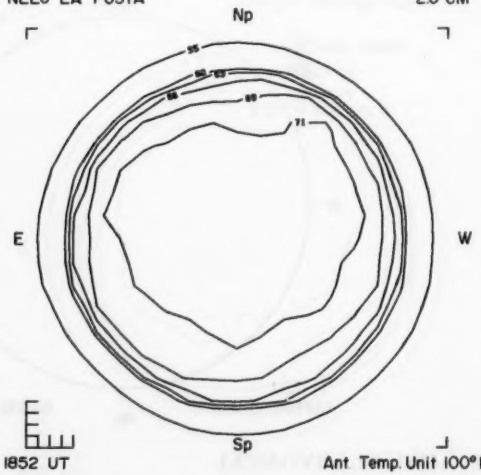
McMATH-HULBERT

CALCIUM REPORT

FAIR M

1520 UT

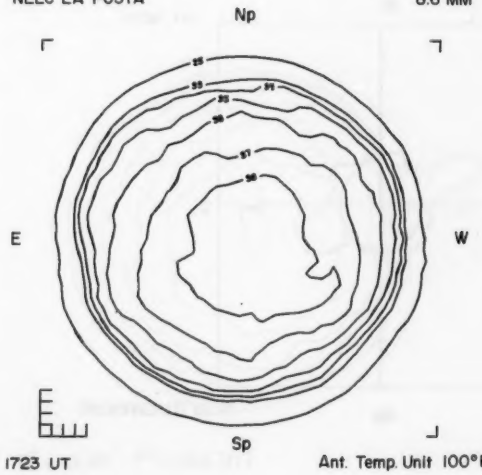
NELC LA POSTA 2.0 CM



1852 UT

Ant. Temp. Unit 100°K

NELC LA POSTA 8.6 MM

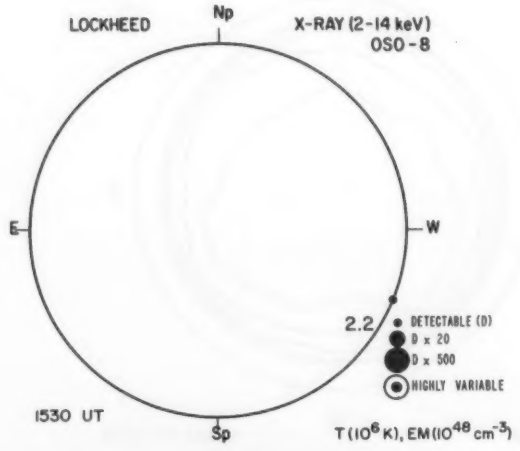


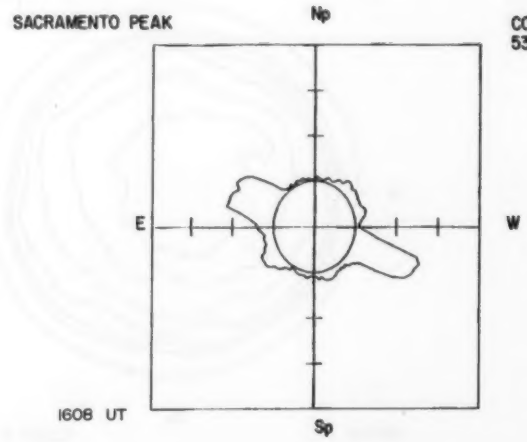
1723 UT

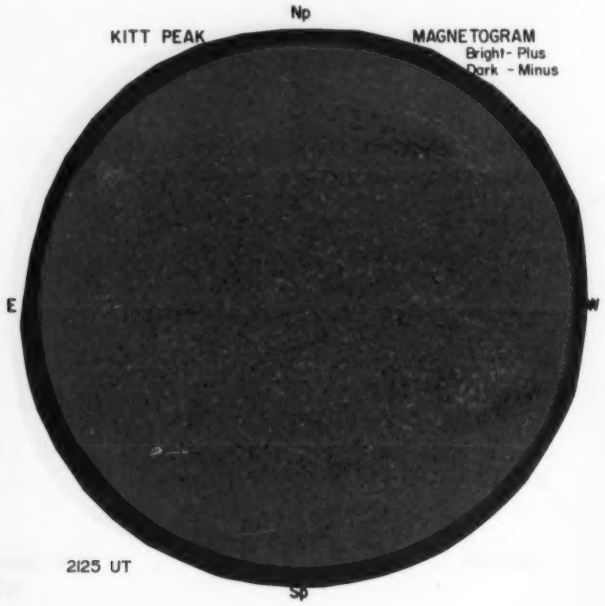
Ant. Temp. Unit 100°K

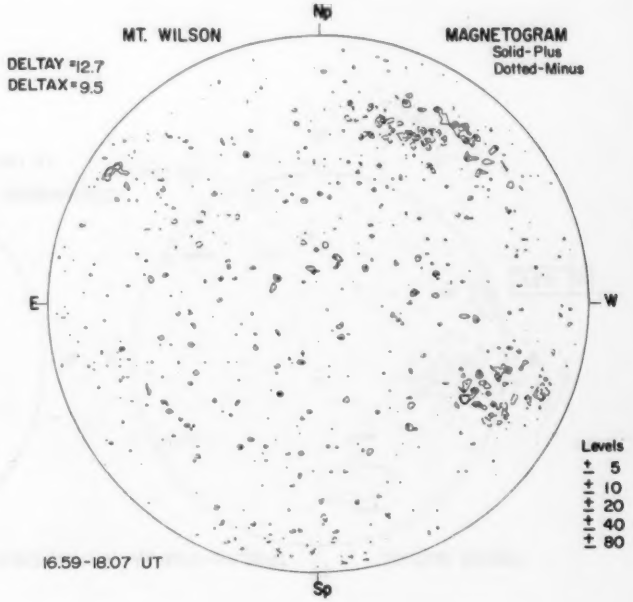
79
Feb 77

FEBRUARY 27, 1977 (P = -21.03, B_0 = -7.19, L_0 = 327.31)



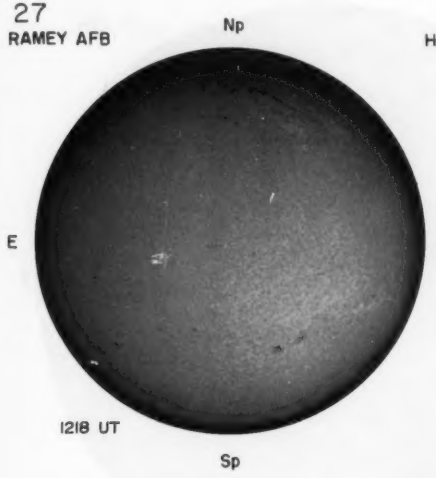






27

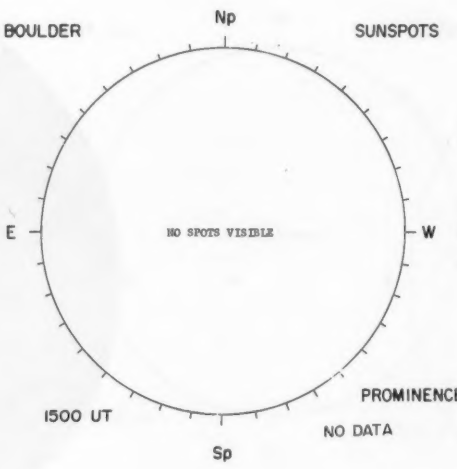
RAMEY AFB



1218 UT

BOULDER

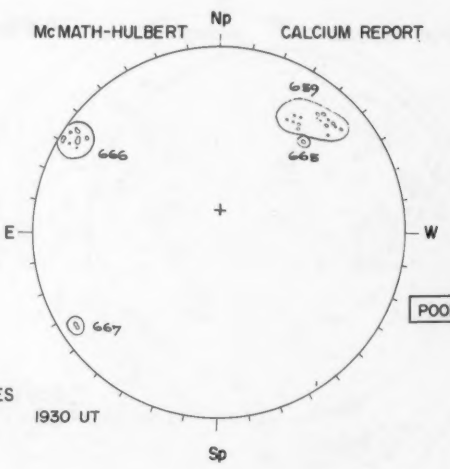
SUNSPOTS



1500 UT

McMATH-HULBERT

CALCIUM REPORT



1930 UT

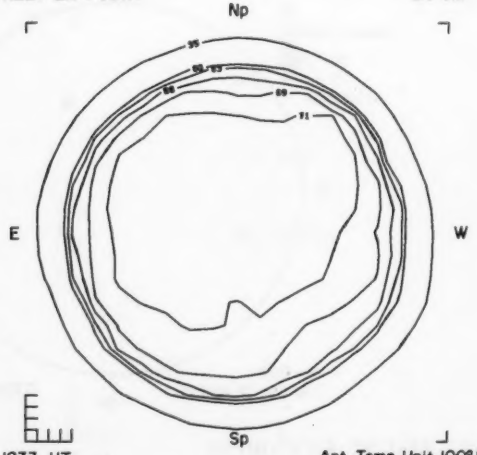
POOR D

PROMINENCES

NO DATA

NELC LA POSTA

2.0 CM

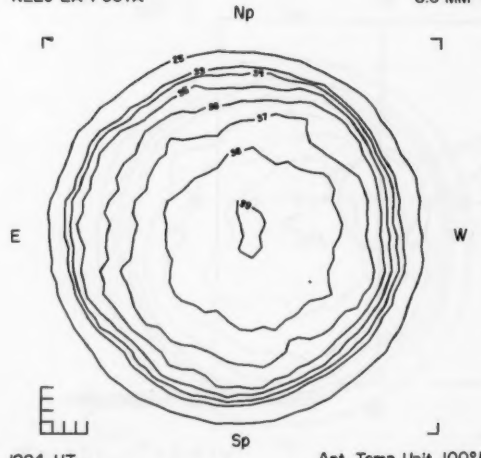


1833 UT

Ant. Temp. Unit 100°K

NELC LA POSTA

8.6 MM

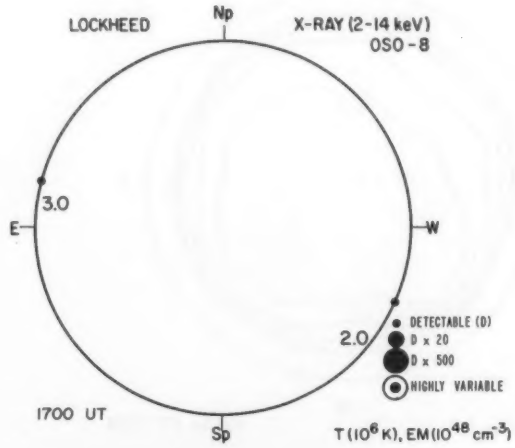


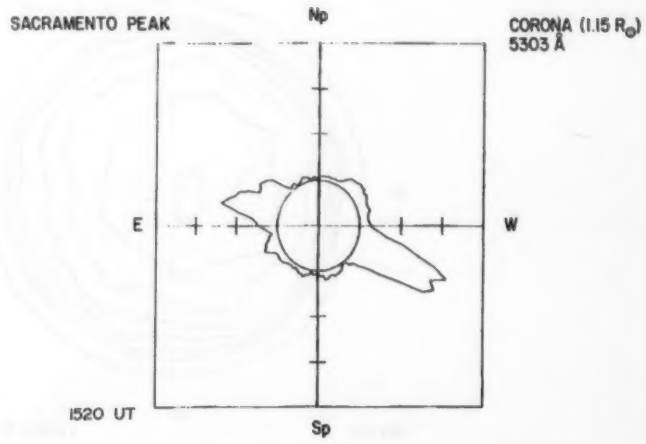
1924 UT

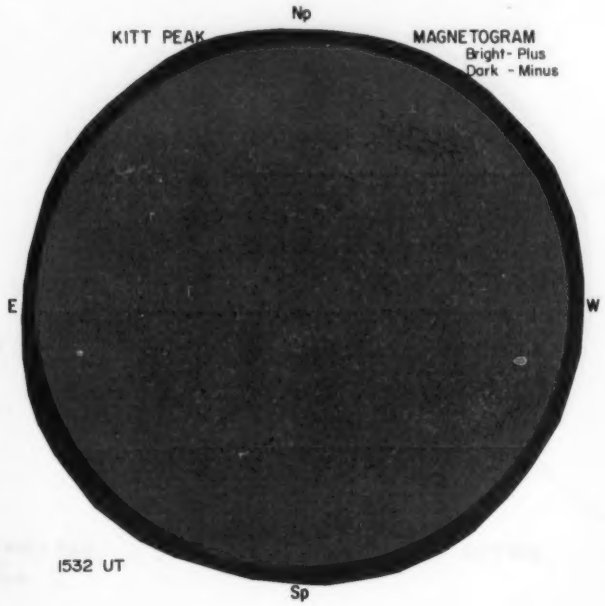
Ant. Temp. Unit 100°K

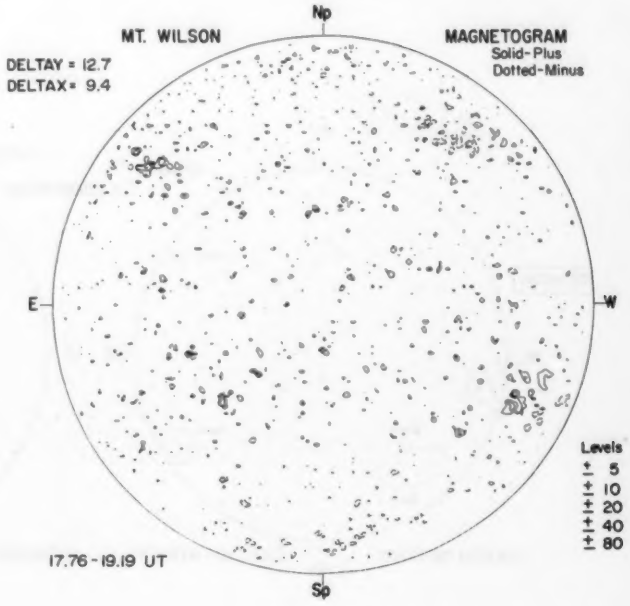
81
Feb 77

FEBRUARY 28, 1977 (P=-21.29, B_0=-7.21, L_0=314.14)



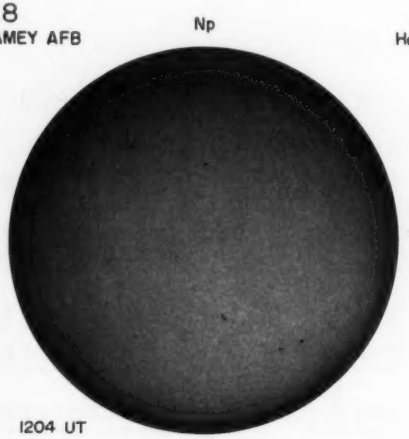






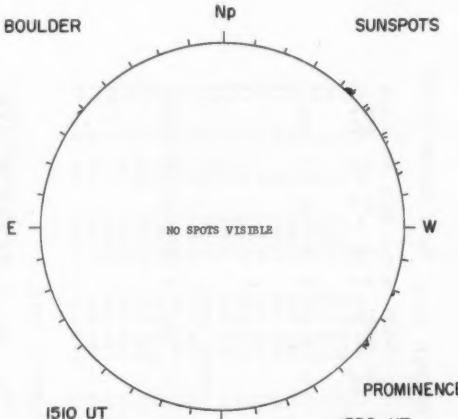
28

RAMEY AFB



1204 UT

BOULDER



1510 UT

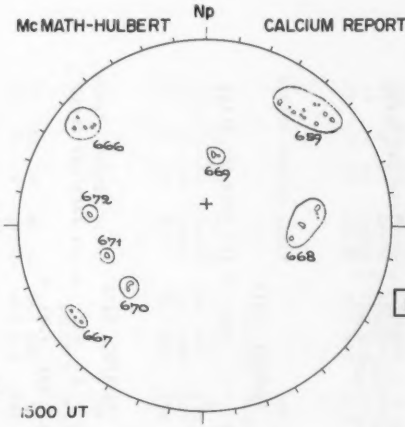
SUNSPOTS

PROMINENCES

1556 UT

McMATH-HULBERT

CALCIUM REPORT



1300 UT

FAIR | D

NELC LA POSTA

2.0 CM

Np

NO DATA

E

CALIBRATION

W

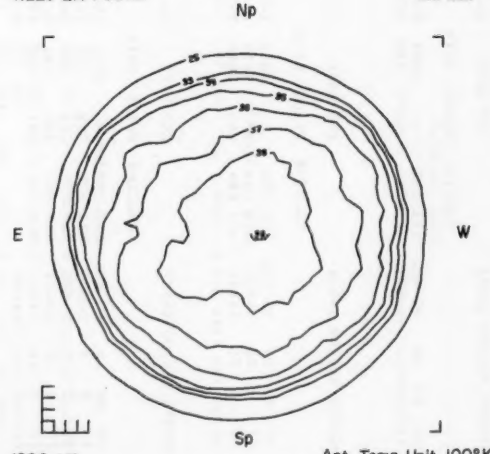
Sp

1937 UT

Ant. Temp. Unit 100°K

NELC LA POSTA

8.6 MM



1806 UT

Ant. Temp. Unit 100°K

83
Feb 77

REGIONS OF SOLAR ACTIVITY

FEBRUARY 1977

MCMATH REGION 14629 CMP DATE 2.2

				CALCIUM PLAGE DATA				SUNSPOT DATA							
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	HW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
77	1	30	14629	S05 E31	311	200	1.5	19749	S07 E32	309	(AF)	1				
77	1	31	14629	S07 E20	308	200	1.5	19750	S25 E09	319	(AF)	2				

MCMATH REGION 14633 CMP DATE 2.3

				CALCIUM PLAGE DATA				SUNSPOT DATA							
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	HW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
77	2	1	14633	S30 E10	292	100	1.5									

MCMATH REGION 14630 CMP DATE 5.5

				CALCIUM PLAGE DATA				SUNSPOT DATA							
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	HW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
77	1	30	14630	N28 E80	262	1200	2.0									
77	1	31	14630	N27 E64	264	1600	3.5	19751	N26 E56	272	(B)	4				

MCMATH REGION 14639 CMP DATE 7.0

				CALCIUM PLAGE DATA				SUNSPOT DATA							
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	HW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
77	2	8	14639	N20 W21	229	300	2.0	19753	N18 W23	231	(AP)	4	B	10	1	AXX
77	2	9	14639	N19 W34	230	300	2.5	19753	N18 W38	232	A	1	B	0	1	AXX
77	2	10	14639	N19 W49	231	200	2.5									
77	2	11	14639	N19 W63	231	200	1.5									
77	2	12	14639				0.0		N16 W40	195	(B)	3	B	20	4	AXX

MCMATH REGION 14634 CMP DATE 7.6

				CALCIUM PLAGE DATA				SUNSPOT DATA							
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	HW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
77	2	2	14634	N33 E65	221	100	2.0									
77	2	3	14634	N33 E50	222	100	1.5									

MCMATH REGION 14644 CMP DATE 7.7

				CALCIUM PLAGE DATA				SUNSPOT DATA							
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	HW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
77	2	10	14644	N32 W39	221	100	1.5									

MCMATH REGION 14636 CMP DATE 9.1

				CALCIUM PLAGE DATA				SUNSPOT DATA							
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	HW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
77	2	3	14636	S19 E70	202	300	2.5									
77	2	4	14636	S19 E56	202	200	1.5									
77	2	5	14636	S19 E47	202	200	1.0									

MCMATH REGION 14635 CMP DATE 9.4 RETURN OF REGION 14607 ROTATION 2

				CALCIUM PLAGE DATA				SUNSPOT DATA							
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	HW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
77	2	2	14635	S27 E85	201	1000	2.0									
77	2	3	14635	S29 E71	201	1200	2.5									
77	2	4	14635	S29 E59	201	1000	2.0									
77	2	5	14635	S29 E47	202	1200	2.0									
77	2	6	14635	S29 E34	202	1000	2.5									
77	2	7	14635	S29 E21	201	1200	2.5									
77	2	8	14635	S29 E10	198	1300	2.5									
77	2	9	14635	S30 W03	199	1200	2.5									
77	2	10	14635	S30 W18	200	1100	2.0									
77	2	11	14635	S30 W31	199	1000	2.0									

REGIONS OF SOLAR ACTIVITY

FEBRUARY 1977

MCMATH REGION 14635 (CONT) CMP DATE 9.4 RETURN OF REGION 14607 ROTATION 2

				CALCIUM PLAGE DATA				SUNSPOT DATA								
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
77	2	13	14635	S30 W58	199	800	2.0									
77	2	14	14635	S30 W70	199	800	2.0									
77	2	15	14635	S30 W83	199	400	1.0									

MCMATH REGION 14647 CMP DATE 9.6

				CALCIUM PLAGE DATA				SUNSPOT DATA								
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
77	2	13	14647	N17 W55	196	200	2.0									
77	2	14	14647	N17 W68	197	200	2.5									
77	2	15	14647	N17 W82	198	100	1.0									

MCMATH REGION 14641 CMP DATE 10.0

				CALCIUM PLAGE DATA				SUNSPOT DATA								
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
77	2	8	14641	N25 E 8	190	100	2.0									

MCMATH REGION 14637 CMP DATE 12.1

				CALCIUM PLAGE DATA				SUNSPOT DATA								
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
77	2	4	14637	S40 E88	172	200	1.5									
77	2	5	14637	S39 E82	167	500	2.0	19752	S39 E77	171	A	1				
77	2	6	14637	S39 E69	167	600	3.0		S39 E74				M	20	1	AXX
77	2	7	14637	S40 E57	165	800	3.5	19752	S40 E53	168	(AP	2	M	30	5	BXO
77	2	8	14637	S40 E44	164	1700	4.0	19752	S39 E40	168	(B)	4	B	90	18	BXI
77	2	9	14637	S40 E32	164	2000	3.5	19752	S40 E28	166	(B)	4	B	170	33	ESI
77	2	10	14637	S42 E18	164	2500	3.5	19752	S41 E15	167	(BY)	4	B	140	51	ESI
77	2	11	14637	S42 E05	163	2400	3.5	19752	S41 E05	164	(D)	4				
77	2	12	14637				0.0		S41 W07	162	(BY)	3	B	160	18	EAI
77	2	13	14637	S41 W17	158	2000	3.5	19752	S41 W19	161	(BY)	5	B	200	15	ESI
77	2	14	14637	S41 W29	158	2000	3.5	19752	S41 W31	160	(B)	4	R	150	18	FSO
77	2	15	14637	S42 W41	157	2200	3.5	19752	S42 W42	158	(B)	5	B	110	8	DSO
77	2	16	14637	S42 W52	156	2400	3.5	19752	S42 W55	158	(BY)	5	B	170	4	EAO
77	2	17	14637	S42 W64	154	2400	3.5	19752	S42 W65	154	(B)	3	B	110	7	ESI
77	2	18	14637	S43 W77	153	2400	3.5	19752	S42 W79	155	(B)	2	B	80	3	FRO
77	2	19	14637	S43 W87	151	2200	3.5	19752	S43 W85	148	(AF)	2	B	0	1	AXX
77	2	20	14637	S42 W90	139	500	1.0									

MCMATH REGION 14648 CMP DATE 12.3

				CALCIUM PLAGE DATA				SUNSPOT DATA								
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
77	2	13	14648	N22 W19	160	200	2.0	19757	N22 W19	161	(BF)	3				
77	2	14	14648	N22 W31	160	200	2.0									
77	2	15	14648	N22 W43	159	100	1.5									
77	2	16	14648	N22 W56	160	100	1.5									
77	2	17	14648	N22 W69	159	100	1.0									

MCMATH REGION 14638 CMP DATE 12.8

				CALCIUM PLAGE DATA				SUNSPOT DATA								
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
77	2	6	14638	N13 E85	151	500	1.5									
77	2	7	14638	N14 E75	147	700	2.0									
77	2	8	14638	N14 E58	150	500	2.5	19754	N12 E46	162	(AF)	3				
77	2	9	14638	N13 E44	152	500	2.0									
77	2	10	14638	N13 E30	152	400	2.0									
77	2	11	14638	N12 E17	151	400	2.0									
77	2	13	14638	N12 W12	153	400	2.0									
77	2	14	14638	N12 W24	153	400	2.0									
77	2	15	14638	N11 W37	153	200	2.0		N12 W29				B	0	1	AXX
77	2	16	14638	N11 W49	153	200	2.0									
77	2	17	14638	N10 W62	152	100	1.5									
77	2	18	14638	N10 W77	153	100	1.5									

REGIONS OF SOLAR ACTIVITY

FEBRUARY 1977

MCMATH REGION 14655 CMP DATE 13.7

				CALCIUM PLAGE DATA					SUNSPOT DATA								
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
77	2	16	14655	N13 W38	142	400	3.0	19760	N10 W40	143	(AP	3	B	10	1	AXX
77	2	17	14655	N13 W51	141	300	2.5									
77	2	18	14655	N13 W66	142	300	2.0									
77	2	19	14655	N13 W82	146	200	1.0									

MCMATH REGION 14650 CMP DATE 13.8

				CALCIUM PLAGE DATA					SUNSPOT DATA								
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
77	2	13	14650	N12 E01	140	100	1.5									

MCMATH REGION 14643 CMP DATE 14.0

				CALCIUM PLAGE DATA					SUNSPOT DATA								
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
77	2	9	14643	N03 E63	133	200	1.5									
77	2	10	14643	N03 E47	135	200	1.5									
77	2	11	14643	N03 E32	136	200	3.0	19755	N03 E30	139	(AP	3	B	10	1	AXX
77	2	12	14643				0.0		N02 E17	138	(B)	5	B	60	7	DSO
77	2	13	14643	N03 E03	138	500	3.0	19755	N03 E03	139	(B)	5	B	100	5	DSO
77	2	14	14643	N03 W10	139	700	3.0	19755	N03 W11	140	(B)	4	R	60	3	DSO
77	2	15	14643	N03 W23	139	800	3.0	19755	N03 W24	140	(B)	5	B	50	5	CAO
77	2	16	14643	N04 W36	140	800	3.0	19755	N03 W38	141	(BP)	5	B	40	3	CSO
77	2	17	14643	N04 W50	140	900	2.5	19755	N05 W55	144	(AP)	3	B	10	1	AXX
77	2	18	14643	N04 W65	141	900	2.5	19755	N04 W68	144	(AP)	2				
77	2	19	14643	N05 W78	142	900	1.5									

MCMATH REGION 14649 CMP DATE 14.0

				CALCIUM PLAGE DATA					SUNSPOT DATA								
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
77	2	13	14649	N24 E03	138	400	3.0	19758	N23 E03	139	(B)	5	B	90	5	CRO
77	2	14	14649	N24 W10	139	600	3.0	19758	N23 W11	140	(B)	4	R	40	4	DSO
77	2	15	14649	N24 W23	139	800	3.0	19758	N22 W26	142	(BP)	4	B	40	6	CSI
77	2	16	14649	N24 W36	140	1000	3.0	19758	N22 W39	142	(B)	4	B	30	5	CSO
77	2	17	14649	N24 W50	140	1000	3.0	19758	N22 W54	143	(BP)	3	B	10	3	BXO
77	2	18	14649	N24 W64	140	900	3.0	19758	N22 W65	141	(AP)	2	B	10	1	AXO
77	2	19	14649	N24 W79	143	900	3.0	19758	N23 W80	143	(AP)	2				

MCMATH REGION 14658 CMP DATE 14.8

				CALCIUM PLAGE DATA					SUNSPOT DATA								
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
77	2	18	14658	S28 W50	126	100	1.0									
77	2	19	14658	S28 W62	126	100	1.5									

MCMATH REGION 14654 CMP DATE 15.6

				CALCIUM PLAGE DATA					SUNSPOT DATA								
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
77	2	15	14654	N22 E00	116	100	1.0									

MCMATH REGION 14660 CMP DATE 18.7

				CALCIUM PLAGE DATA					SUNSPOT DATA								
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
77	2	21	14660	N23 W38	76	100	1.0									
77	2	22	14660	N24 W52	76	100	1.5									

REGIONS OF SOLAR ACTIVITY

FEBRUARY 1977

HCMATH REGION 14651 CMP DATE 20.5 RETURN OF REGION 14625 ROTATION 2

			CALCIUM PLAGE DATA					SUNSPOT DATA							
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
77	2	13	14651	S20 E88	53	500	2.0	19759	S20 E88	54	A	3				
77	2	14	14651	S19 E76	51	800	2.5	19759	S20 E75	54	(AP)	4	R	200	1	HSX
77	2	15	14651	S21 E65	51	1400	3.0	19759	S20 E61	55	(AP)	5	B	140	1	HSX
77	2	16	14651	S22 E53	51	1400	3.0	19759	S20 E47	56	(AP)	5	B	120	1	HSX
77	2	17	14651	S23 E40	50	1700	2.5	19759	S20 E34	55	(AP)	5	B	110	1	HSX
77	2	18	14651	S23 E26	50	1900	2.5	19759	S19 E23	53	(BY)	5	B	130	5	CSO
77	2	19	14651	S23 E13	51	1900	2.5	19759	S20 E12	51	(BP)	5	B	80	2	CSO
77	2	20	14651	S23 W02	51	2000	2.5	19759	S19 W05	55	(AP)	4	B	120	1	HSX
77	2		14651				0.0		S24 W02	52	(AF)	2				
77	2	21	14651	S23 W12	50	1800	2.5	19759	S19 W18	55	(AP	4	B	100	2	CSO
77	2	22	14651	S23 W26	50	1500	2.5	19759	S19 W32	55	(AP)	4	B	40	1	HSX
77	2	23	14651	S24 W40	49	1500	2.5		S18 W43				B	50	1	HSX
77	2	24	14651	S24 W54	51	1500	2.5		S18 W55				R	40	1	HSX
77	2	25	14651	S24 W70	53	1500	2.0	19759	S19 W72	57	(AP)	4				
77	2	26	14651	S23 W80	52	1200	2.0	19759	S19 W85	57	AP	3	R	40	1	HSX

HCMATH REGION 14663 CMP DATE 22.5

			CALCIUM PLAGE DATA					SUNSPOT DATA							
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
77	2	22	14663	S36 W01	25	100	1.5									

HCMATH REGION 14656 CMP DATE 24.1

			CALCIUM PLAGE DATA					SUNSPOT DATA							
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
77	2	17	14656	S28 E83	7	600	2.0									
77	2	18	14656	S27 E74	2	800	2.0									
77	2	19	14656	S27 E59	5	600	2.0									
77	2	20	14656	S27 E44	5	600	2.5									
77	2	21	14656	S27 E34	4	500	2.5									
77	2	22	14656	S27 E20	4	200	2.0									
77	2	23	14656	S27 E05	4	200	1.0									
77	2	24	14656	S27 W09	6	100	1.0									

HCMATH REGION 14664 CMP DATE 24.1

			CALCIUM PLAGE DATA					SUNSPOT DATA							
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
77	2	23	14664	S06 E06	3	100	1.5									

HCMATH REGION 14659 CMP DATE 25.3 RETURN OF REGION 14621 ROTATION 2

			CALCIUM PLAGE DATA					SUNSPOT DATA							
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
77	2	19	14659	N32 E38	337	300	1.0									
77	2	20	14659	N32 E62	348	300	1.0									
77	2	21	14659	N32 E50	349	300	1.0									
77	2	22	14659	N33 E37	348	400	1.0									
77	2	23	14659	N33 E22	348	400	1.0									
77	2	24	14659	N33 E09	349	300	1.0									
77	2	25	14659	N33 W05	348	300	1.0									
77	2	26	14659	N33 W15	347	300	1.0									
77	2	27	14659	N33 W30	346	400	1.5									
77	2	28	14659	N33 W40	345	400	1.0									
77	3	01	14659	N33 W51		400	1.0									
77	3	02	14659	N33 W63		300	1.0									

HCMATH REGION 14665 CMP DATE 25.5

			CALCIUM PLAGE DATA					SUNSPOT DATA							
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
77	2	25	14665	N24 W 4	347	100	1.5									
77	2	26	14665	N24 W14	346	100	1.5									
77	2	27	14665	N24 W30	346	100	1.5									

REGIONS OF SOLAR ACTIVITY

FEBRUARY 1977

MCMATH REGION 14668 CMP DATE 26.2

			CALCIUM PLAGE DATA					SUNSPOT DATA							
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
77	2	28	14668	S05 W32	337	300	1.5									

MCMATH REGION 14675 CMP DATE 27.8

			CALCIUM PLAGE DATA					SUNSPOT DATA							
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
77	3	02	14675	S06 W36		100	1.5									
77	3	03	14675	S05 W51		100	1.0									

MCMATH REGION 14669 CMP DATE 28.4

			CALCIUM PLAGE DATA					SUNSPOT DATA							
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
77	2	28	14669	N16 W03	308	200	1.5									

MCMATH REGION 14673 CMP DATE 28.7

			CALCIUM PLAGE DATA					SUNSPOT DATA							
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
77	3	01	14673	S03 W09		100	1.5									

Note: No calcium spectroheliograms were secured at the McMath-Hulbert Observatory on February 12, 1977.
No sunspot observations were made at Mt. Wilson on February 23 and 24, 1977.

DAILY CALCIUM PLAGE INDEX

FEBRUARY 1977

YR	MO	DAY	INDEX	YR	MO	DAY	INDEX	YR	MO	DAY	INDEX
77	2	1	6.2	77	2	11	9.1	77	2	21	5.2
77	2	2	6.4	77	2	12	*	77	2	22	3.9
77	2	3	9.2	77	2	13	9.8	77	2	23	3.2
77	2	4	7.3	77	2	14	10.2	77	2	24	2.3
77	2	5	9.0	77	2	15	10.6	77	2	25	1.3
77	2	6	8.3	77	2	16	11.4	77	2	26	0.7
77	2	7	9.3	77	2	17	9.3	77	2	27	0.8
77	2	8	11.7	77	2	18	7.7	77	2	28	1.8
77	2	9	10.7	77	2	19	6.6				
77	2	10	9.7	77	2	20	5.7				

* NO OBSERVATIONS

SUDDEN IONOSPHERIC DISTURBANCES

FEBRUARY 1977

DAY	UNIVERSAL TIME				WIDE SPREAD INDEX	NUMBER OF STATION REPORTS BY TYPE							KNOWN FLARE	McMATH REGION
	START	END	MAX	IMP		SWF	SCNA	SEA	SPA	LF-SPA	SES	SFD		
01	1210	1245	1215	1-	1						1		1207	14630
02	0828	0900	0831	1-	1						1		0825	14630
02	0922	1000	0928	1	1						1		0921	14630
08	1857	1935	1904	1	3						3		1858	14637
11	2126	2230	2134	1+	5	1			3	1	13		2127	14637
12	1535	1608	1538	1-	5			1			8		1535E	14637
13	1715	1927	1733	1	5	2			3	1	8		1708	14637
17	0603	0735	0616	1-	3	1			2				0606	X-RAY
17	1349U	1406	1350	1	1			1					1339	14649
17	1541	1829	1555	1	5	2		4	1		11		1540	14637
18	2348	0028	2354	1-	1				1				2344	14649
28	2041	2300	2053	1	5	1				1	8		NF	

PERIODS OF NO OBSERVATIONS:

DATE	TIME (UT) and STATION
01-10	0000-2400 A37
01-08	0000-2400 A28
01-07	0000-2400 A4
01-04	0000-2400 A36
01	0000-2400 A29, 0000-2400 TN
02	1414-1432 TM, 2136-2241 TM
03	1302-1314 TM, 2030-2053 TM
04	0700-1350 MC
07	2057-2148 UM (13 kHz)
12	0000-2400 A37
13	0000-2400 A1, 0000-2400 A19
14	0600-0640 UM (10 kHz), 2020-2117 UM (10 kHz)
16	0000-2400 TN
17	0551-1915 UM (13 kHz), 0551-1915 UM (10 kHz)
18	1430-1436 TM, 1501-1514 TM
19-21	0000-2400 A36
23-26	0000-2400 A36
23-25	0000-2400 A28
24	2115-2400 UM (13 kHz), 2115-2400 UM (10 kHz)
25	0000-1115 UM (13 kHz), 0000-1115 UM (10 kHz), 1200-1515 UM (13 kHz), 1200-1515 UM (10 kHz)
28	0000-2400 A28, 0000-2400 A36

STATIONS REPORTING FOR FEBRUARY 1977

AAVSO (A1, A4, A19, A21, A26, A28, A30, A31, A34, A35, A36, A37, A40) (SES) (A1, A31) (SEA) (A31) (SWF)
HERSTMONCEUX (HC) (SEA)
HIRAISO (HI) (SWF)
HOBART (TA) (SEA)
HUANCAYO (HU) (SWF)
INUBO (IN) (SPA)
MANILA (MA) (SPA)
MCMATH (MC) (SWF, SCNA)
PANSKA VES (PU) (SEA)
SAO PAULO (UM) (SES, SPA)
SOFIA (SF) (SEA)
SC CLOUD (SC) (SES)
TABLE MOUNTAIN (TM) (SPA, LF-SPA)
TORINO (TN) (SPA)
UPICE (UI) (SEA)

SID's BY McMATH REGION

FEBRUARY 1977

DAY	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
REGION																												
30	1	2																										
37								1			1	1	1				1											
49																	1	1										
X-RAY																	1											
UNKNOWN																												1
NO FP																												

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

FEBRUARY 1977

FEB 1977	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE
				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
01	0000	0935	MANI										
	0742	1541	WEIS				0832.1	0832.2	1				UNCLB
			WEIS				0953.5	0953.6	1				IIIB
	0715	1553	DURN	1003.6	1003.8	3	1003.6	1003.8	3				IIIG
			WEIS				1003.7	1004.0	3				IIIG
			WEIS				1132.6	1133.0	1				IIIG
	1202	2152	SGMR										
	1400	2345	HARV										
	2225	2400	MANI										
02	0000	0501	MANI										
	0649	0935	MANI										
	0714	1554	DURN										
	1201	2154	SGMR										
	0729	1246	WEIS				1241.4	1242.2	1				IIIG
	1400	2345	HARV										
	1440	1543	WEIS										
	2225	2400	MANI										
03	0000	0937	MANI										
	0713	1600	DURN										
	0727	1305	WEIS										
	1200	2155	SGMR										
	1346	1404	WEIS										
	1403	2345	HARV										
	1425	1504	WEIS										
	1510	1544	WEIS										
	2225	2400	MANI										
04	0000	0939	MANI										
	0711	1605	DURN										
	0725	1545	WEIS										
	1159	2156	SGMR										
	1400	2345	HARV										
	2225	2400	MANI										
05	0000	0939	MANI										
	0710	1607	DURN										
	0904	0935	WEIS										
	1125	1230	WEIS										
	1157	2158	SGMR										
	1430	1525	WEIS										
	1550	2345	HARV				1852		2	1852		2	IIIB
	2224	2400	MANI										
06	0000	0501	MANI										
	0707	1610	DURN										
	0819	0939	MANI										
	1020	1550	WEIS										
	1156	2159	SGMR										
	1400	2345	HARV										
	2224	2400	MANI										
07	0000	0939	MANI										
	0706	1610	DURN										
	0720	1552	WEIS										
	1155	2200	SGMR										
	1400	2345	HARV										
	2224	2400	MANI										
08	0000	0939	MANI										
	0705	1521	DURN										
	0719	1307	WEIS										
	1154	2202	SGMR										
	1331	1553	WEIS										
	1400	2345	HARV				1659		1	1659		1	IIIB
			HARV				2210		3	2210		3	IIIG
	2223	2400	MANI										
09	0000	0939	MANI										

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

FEBRUARY 1977

FEB 1977	TIMES OF OBSERVATION START UT	TIMES OF OBSERVATION END UT	STATION	EVENTS DECIMETRIC BAND START UT	DECIMETRIC BAND END UT	DECIMETRIC BAND INT	METRIC BAND START UT	METRIC BAND END UT	METRIC BAND INT	DEKAMETRIC BAND START UT	DEKAMETRIC BAND END UT	DEKAMETRIC BAND INT	SPECTRAL TYPE
09	0704	1610	DURN	0704 E	1610 D		0704 E	1610 D					IW
			DURN	0717.6	0717.7	3	0717.6	0717.7	3				IIIG
	0717	1322	WEIS										
	1014	1435	DWIN				1014	1435	1				IS
	1153	2203	SGMR										
			DWIN				1317.2		2				IIIB
	1324	1555	WEIS										
			DWIN				1420.3	1420.5	1				IIIG
	1400	2345	HARV				1903	1913	2	1903	1913	2	IIIGG
	2222	2400	MANI										
10	0000	0939	MANI							0358.1	0359.1	3	II
	0703	1614	DURN	0951.7	0951.9	2	0951.8	0951.9	1				IIIG
			DURN	1025.5	1025.9	3	1025.5	1025.9	3				IIIG
	0716	1509	WEIS				1025.7	1026.0	1				IIIG
	1031	1413	DWIN				1031	1413	1				IS
	1151	2118	SGMR										
			WEIS				1245.4	1259.4	1				IIIGG
	1400	2345	HARV				1631	1632	1	1631	1632	1	IIIG
			HARV				2002		1	2002		1	IIIG
			HARV				2020		1	2020		1	IIIB
			HARV				2026		1	2026		1	IIIB
			HARV				2054	2056	3	2054	2056	3	IIIG
			HARV				2108	2109	3	2108	2109	3	IIIG
			HARV				2129		3	2129		3	IIIB
	2222	2400	MANI										
11	0000	0939	MANI										
	0702	1614	DURN	0740.0	0740.7	3	0740.0	0740.7	3				IIIGG
	0714	1559	WEIS				0740.2	0740.8	2				IIIGG
			DURN	0740.3	0741.3	3	0740.3	0741.3	2				DCIM
			WEIS				0740.6	0741.3	2				CONT
			WEIS				0742.6	0750.7	1				IIIGG
			WEIS				0810.3	1212.0	2				IS
			DURN	0830	1614	1	0830	1614	1				IC,DC,N
	0942	1446	DWIN				0942	1446	1				IS
			DWIN				1101.1	1001.9	3				IIIGG
			DURN	1101.1	1101.9	3	1101.1	1101.9	3				IIIGG,DCIM
			WEIS				1101.2	1101.8	2				IIIGG
			WEIS	1101.5	1102.3	1							CONT
	1400	2345	HARV				1820		1	1820		1	IIIB
			HARV				1935		1	1935		1	IIIB
	2050	2206	SGMR										
	2222	2400	MANI										
12	0000	0939	MANI										
	0657	1620	DURN	0657 E	1620 D	3	0657 E	1620 D	3				IC,DC,N
	0712	1600	WEIS				0716.0	1552.0	2				I
			WEIS				0727.1	0727.9	1				IIIG
			WEIS				0742.9	0743.4	2				IIIG
			WEIS				0744.2	0744.9	1				IIIB
			WEIS				0757.6	0802.0	1				IIIG
			WEIS				0802.3	0802.4	1				IIIB
			DURN	0809.1	0809.8	1							DCIM
			WEIS				0822.2	0826.8	1				IIIG
			WEIS				0824.0	0824.7	3				IIIG
			DURN	0924.2	0924.3	2	0924.2	0924.3	2				IIIG
			DURN	1005.6	1005.6	3							III
			DURN	1007.0	1007.1	3	1007.0	1007.1	3				IIIG
			WEIS				1007.0	1007.1	1				IIIG
			WEIS				1033.3	1033.4	2				IIIB
			WEIS				1037.6	1037.7	1				IIIB
			DURN	1054.4	1054.5	2							III
			WEIS				1128.8	1129.6	2				IIIG
	1149	2207	SGMR										
			DURN	1229.3	1229.5	3							IIIG,RS
			WEIS	1229.4	1229.5	2							IIIRS
			WEIS				1525.5	1526.6	2				IIIG
	1400	2345	HARV				1640	2058	1	1640	2058	1	IIISW
	2221	2400	MANI										

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

FEBRUARY 1977

FEB 1977	TIMES OF OBSERVATION START UT	TIMES OF OBSERVATION END UT	STATION	EVENTS DECIMETRIC BAND START UT	DECIMETRIC BAND END UT	DECIMETRIC BAND INT	METRIC BAND START UT	METRIC BAND END UT	METRIC BAND INT	DEKAMETRIC BAND START UT	DEKAMETRIC BAND END UT	DEKAMETRIC BAND INT	SPECTRAL TYPE
13	0000	0533	MANI										
	0607	0939	MANI										
	0655	1622	DURN	0655 E	1330	2	0655 E	1330	2				IC,DC,N
	0710	0851	WEIS				0724.1	1500.0	2				I
	1026	1602	WEIS				0739.6	0739.7	1				IIIB
	1147	2208	SGMR										
			WEIS				1251.2	1251.3	1				IIIB
	1400	2345	HARV				2024	2025	1	2024	2025	1	IIIG
			HARV				2119	2120	1	2119	2120	1	IIIG
	2221	2400	MANI										
			HARV				2257	2305	2	2257	2305	2	IIIGG
14	0000	0939	MANI							0013.7	0014.0	3	II
	0653	1623	DURN	0653 E	1623 D	1	0653 E	1623 D	1				IC,N
	0709	1604	WEIS				0827.7	0828.3	1				IIIG
			WEIS				0917.0	0917.2	2				IIIG
	1400	2345	HARV				1833		1	1833		1	IIIG
			HARV				1838		1	1838		1	IIIB
			HARV				1849	1850	2	1849	1850	2	IIIG
			HARV				1857		1	1857		1	IIIB
			HARV				1944		1	1944		1	IIIB
	1146	2210	SGMR							2006.7	2007.1	1	III
			HARV				2007	2008	2	2007	2008	2	IIIG
			HARV				2035		1	2035		1	IIIB
			HARV				2122		1	2122		1	IIIB
	2221	2400	MANI										
15	0000	0939	MANI										
	0651	1623	DURN	0651 E	1450		0651 E	1450					IW,N
	0706	0952	WEIS										
	0959	1201	WEIS										
	1144	2211	SGMR										
	1208	1358	WEIS										
	1400	2345	HARV				1823		2	1823		2	IIIB
	2221	2400	MANI										
16	0000	0939	MANI										
	0650	1625	DURN										
	0841	1210	DWIN				0841	1210	1				INW
	1143	2212	SGMR							1941.7	1941.8	1	III
	1400	2345	HARV				1941	1942	2	1941	1942	2	IIIG
			HARV				2139	2140	1	2139	2140	1	IIIG
	2221	2400	MANI										
17	0000	0939	MANI										
	0649	1626	DURN										
	0946	1436	DWIN				0946	1436	1				INW
			DWIN				1128.9	1129.2	1				IIIG
	1142	2214	SGMR										
	1251	1609	WEIS										
			DWIN				1325.6	1326.5	1				IIIG
	1400	2345	HARV										
	2219	2400	MANI										
18	0000	0939	MANI										
	0701	1611	WEIS										
	1140	2215	SGMR										
	1400	2345	HARV										
	0648	1627	DURN	1515	1627 D	1	1515	1627 D	1				IN
	2219	2400	MANI										
19	0000	0939	MANI										
	0646	0849	DURN										
	0659	1232	WEIS										
	1046	1534	DWIN				1046	1534	1				IN
	1139	2216	SGMR										
	1313	1612	WEIS										
	1400	2345	HARV										
	0857	1634	DURN	1546	1634 D		1546	1634 D					IW,N
	2219	2400	MANI										

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

FEBRUARY 1977

FEB 1977	TIMES OF OBSERVATION START UT	TIMES OF OBSERVATION END UT	STATION	EVENTS DECIMETRIC BAND START UT	DECIMETRIC BAND END UT	DECIMETRIC BAND INT	METRIC BAND START UT	METRIC BAND END UT	METRIC BAND INT	DEKAMETRIC BAND START UT	DEKAMETRIC BAND END UT	DEKAMETRIC BAND INT	SPECTRAL TYPE
20	0000	0137	MANI										
	0146	0332	MANI										
	0344	0939	MANI										
	0644	1635	DURN	0644 E	1635 D		0644 E	1635 D					IN,N
	0657	1614	WEIS										
	0747	1500	OWIN				0747	1500	1				IN
	1137	2217	SGMR										
	1338	2345	HARV							2130	2204	2	IN
	2219	2400	MANI										
21	0000	0939	MANI										
	0642	1636	DURN										
	0656	1407	WEIS										
	1136	2219	SGMR										
	1345	2345	HARV										
	1411	1616	WEIS										
	2219	2400	MANI										
22	0000	0142	MANI										
	0225	0339	MANI										
	0349	0939	MANI										
	0642	1638	DURN										
	0654	1617	WEIS										
	1134	2220	SGMR										
	1345	2345	HARV										
	2219	2400	MANI										
23	0000	0939	MANI										
	0641	1640	DURN										
	0652	1016	WEIS										
	1133	2221	SGMR										
	1345	2345	HARV										
	1532	1619	WEIS										
	2217	2400	MANI										
24	0000	0939	MANI										
	0639	1343	DURN										
	0650	1620	WEIS										
	1131	2222	SGMR										
	1345	2345	HARV										
	2215	2400	MANI										
25	0000	0712	MANI										
	0637	1643	DURN										
	0648	1619	WEIS										
	0800	0939	MANI										
	1129	2224	SGMR										
	1345	2345	HARV										
	2215	2400	MANI										
26	0000	0939	MANI										
	0635	1644	DURN										
	1128	2225	SGMR										
	1346	2345	HARV										
	2215	2318	MANI										
	2333	2400	MANI										
27	0000	0939	MANI										
	0635	1650	DURN										
	1126	2226	SGMR										
	1345	2345	HARV										
	2215	2400	MANI										
28	0000	0939	MANI										
	0634	1650	DURN										
	0740	1627	WEIS				0938.4	0938.6	1				IIIB
	1346	2345	HARV				2052	2056	2	2052	2056	2	UNCL
	1125	2228	SGMR							2053.3	2228.0	1	CONT
			HARV				2059		2	2059		2	UV
	2215	2400	MANI										

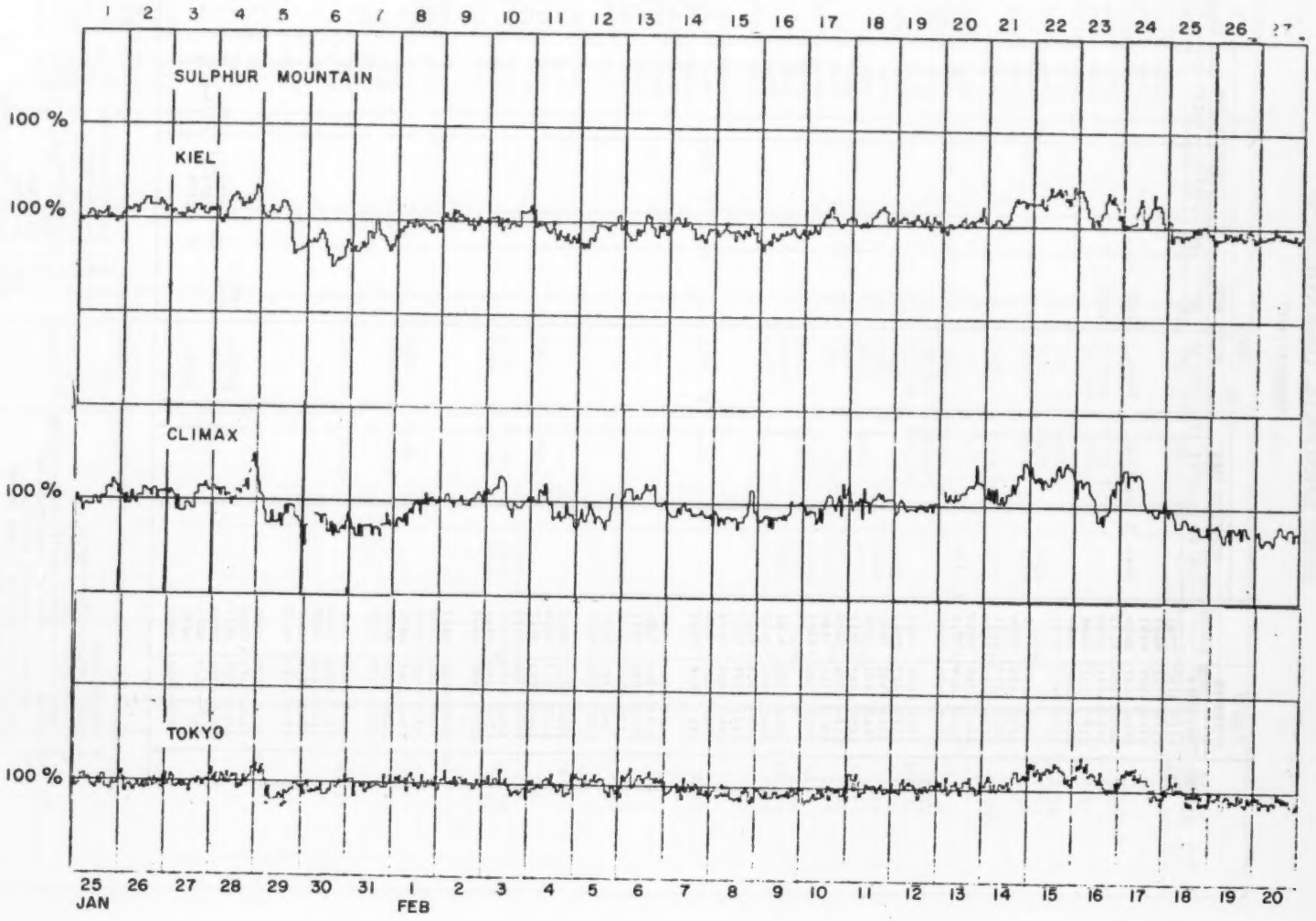
The symbols used in connection with the spectral type in describing the important bursts are as follows:

B = Single burst
G = Small group (< 10) of bursts
GG = Large group (> 10) of bursts
C = Underlying continuum (particularly with type I)
S = Storm in the sense of intermittent but apparently connected activity
N = Intermittent activity in this period
U = U-shaped burst of Type III

RS = Reverse slope burst
DP = Drifting pairs
DC = Drifting Chains
H = Herringbone
W = Weak
P = Pulsations
CONT = Continuum
UNCLF = Unclassified activity

COSMIC RAY INDICES
(Neutron Monitors)

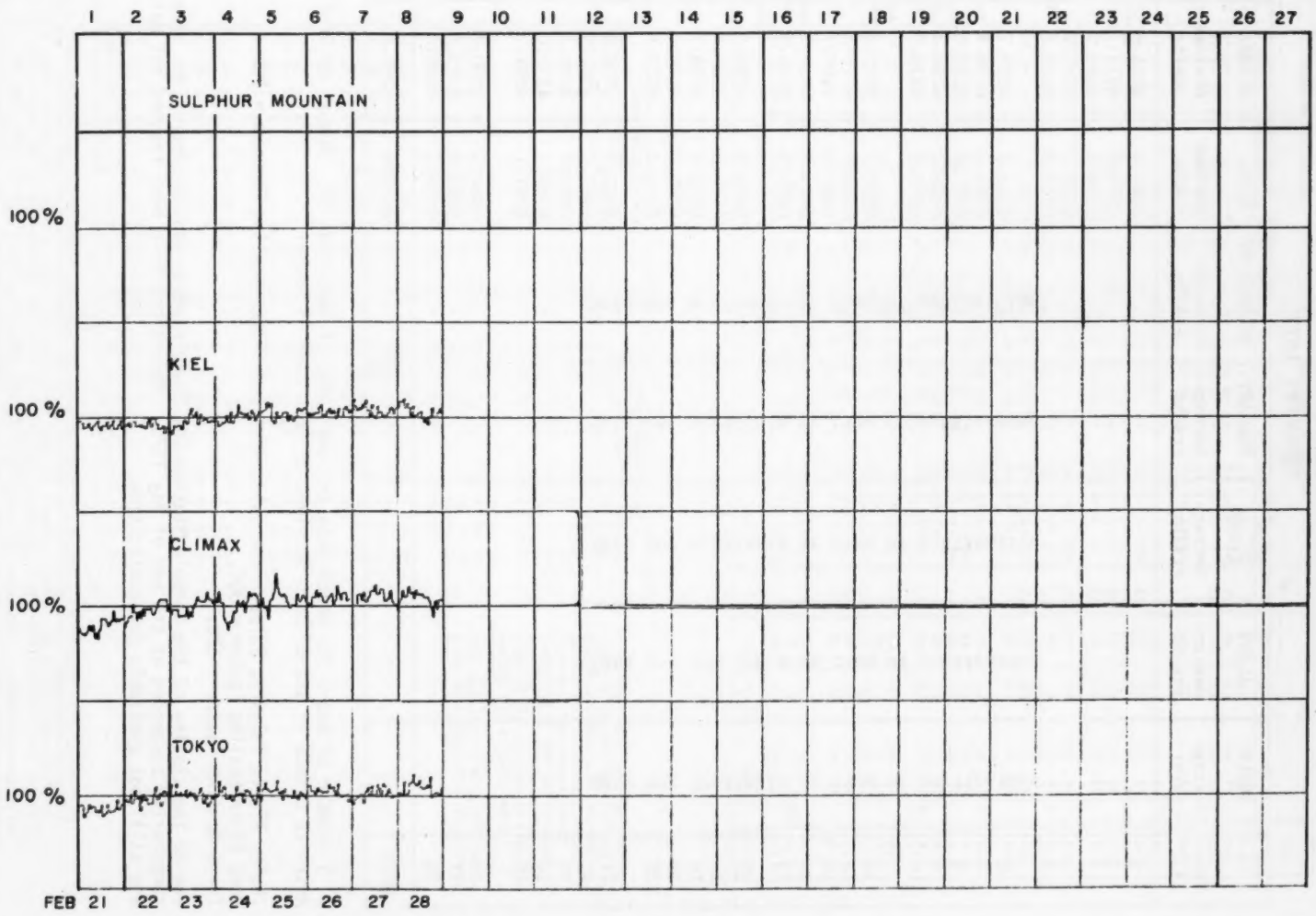
Bartels Rotation 1962 (January - February 1977)



JAN FEB

COSMIC RAY INDICES
(Neutron Monitors)

Bartels Rotation 1963 (February 1977)



COSMIC RAY INDICES

(Neutron Monitors)

FEBRUARY 1977

Feb. 1977	THULE Average cts/hr	ALERT Average cts/hr	DEEP RIVER Average cts/hr	CALGARY Average cts/hr	SULPHUR MT Average cts/hr	KIEL Average cts/hr	CLIMAX Average cts/hr	TOKYO Average cts/hr
1	Data not available at time of publication	Data not available at time of publication	Data not available at time of publication	Data not available at time of publication	Data not available at time of publication	6349.9	4254.0	3678.5
2						6374.9	4275.7	3678.9
3						6376.7	4282.7	3673.1
4						6335.6	4260.2	3674.4
5						6339.0	4240.1	3680.5
6						6345.7	4289.7	3687.8
7						6351.0	4250.8	3669.5
8						6337.8	4245.0	3661.3
9						6326.2	4250.2	3663.8
10						6375.8	4270.0	3664.7
11						6389.7	4285.0	3679.0
12						6383.8	4270.5	3678.8
13						6381.1	4307.7	3683.1
14						6415.9	4312.3	3691.4
15						6471.2	4344.9	3711.8
16						6432.0	4296.9	3701.2
17						6409.6	4305.8	3693.3
18						6353.8	4238.7	3671.8
19						6339.7	4220.0	3659.7
20						6341.2	4212.8	3656.4
21						6341.5	4226.8	3651.9
22						6341.6	4262.9	3672.8
23						6353.7	4271.5	3679.1
24						6368.7	4272.4	3680.4
25						6381.1	4287.7	3682.9
26						6384.4	4290.8	3685.8
27						6390.6	4293.6	3682.4
28						6386.1	4289.3	3693.3
MEAN						6370.6	4271.9	3678.1

( ) Number of hours for which data are available if less than 24. Number of Section Hours at Climax if sum of both sections is less than 40 hours.

Thule, Alert, Calgary, Sulphur Mountain, Kiel and Climax Scaling Factors = 100.
Deep River Scaling Factor = 300.
Tokyo Scaling Factor = 128.

Due to the closing of the Geopole Station the Thule neutron monitor operations were temporarily suspended at the end of May 1976. Operations have been resumed but data are still not available for publication.

GEOMAGNETIC ACTIVITY INDICES

FEBRUARY 1977

Day	Three-Hourly Indices Kp									Three-Hourly Indices Km								Ap	aa *					Cp
		1	2	3	4	5	6	7	8	Sum	1	2	3	4	5	6	7	8		N	S	M			
1	Q7A	2-	3+	1+	0+	1-	1-	1+	3	12+	1	3-	2-	1-	1+	1	2-	3-	7	17	11	12	16		0.4
2	D2	4-	4+	4-	4	4-	1	3-	4	27	3-	3+	3+	4-	4-	1+	3	3+	21	39	29	39	29		1.1
3		3+	3+	1+	1	1-	2+	2-	4-	17+	3-	3-	1+	1+	1+	2	2-	3	11	24	13	16	22		0.6
4	Q2	2+	1+	1+	1	1+	1-	0+	0	8+	2+	1+	1	1+	2-	1	0+	1-	4	8	11	11	9	C	0.1
5		0	1	4	3	2	3-	1	2-	15+	1	1+	3+	3-	2	2+	1+	2-	9	14	20	21	13		0.5
6		2+	1+	1+	3-	3	3	4-	4+	22-	2-	1+	1+	2+	3	3	4-	4	14	28	22	13	38		0.8
7	D3*	4+	3+	2+	3-	3	3	4-	4-	26	4-	3-	2	3-	3+	3	4-	3+	18	32	29	27	35		1.0
8	D4*	3+	3	3-	2+	3-	4	4	4	26	3-	2	3-	2	3	4+	4	4-	18	36	37	19	55		1.0
9	D1	4	3+	3-	4	4+	4+	4	4	31-	3	3	2+	4-	4	4	4-	3	25	46	34	25	55		1.2
10		3+	2	2+	3-	3	3-	1-	3+	20	3	2-	2-	3-	3+	3-	1	3	12	23	20	19	25		0.7
11		3-	3+	3	3	3+	3-	1+	3-	22	2+	3-	3-	3	3+	3-	1	2+	13	27	18	22	24		0.8
12	Q0A	3-	2	1+	2+	1+	1+	2+	2-	15	2	1+	1	2-	2-	1+	2-	2-	7	18	8	13	13	C	0.4
13		3	3	2+	2-	1	3-	4-	2+	20-	2+	2+	2	2-	2-	3-	4-	3	12	21	15	16	21		0.7
14		2+	3-	2-	1+	3-	2+	4-	3-	19+	2	2+	2-	1+	3	2+	3+	2+	11	27	21	14	34		0.6
15		2+	3-	2-	1	1	2	2+	3	16	2-	2-	1+	1	1+	2+	3-	3	8	20	13	12	21		0.4
16	Q4K	3	3-	2+	1-	0+	1-	1	1-	11+	2+	2+	2+	1	0+	1+	1+	1	6	12	12	18	7	K	0.3
17		2+	1+	1+	1+	2	3-	3	3	17	2+	1+	1+	2-	2+	3	3+	3+	9	19	26	11	34		0.5
18	D5*	4	5+	3-	1+	2+	2	3-	2+	23-	4	5-	3-	1+	3-	2	2+	2-	17	30	25	35	22		0.9
19	Q5	3-	2-	1+	1	2	2	2	1	14-	2	2-	1+	1	2	3-	2+	1	6	17	15	13	20		0.3
20	Q3	1+	1	2+	1-	1	1-	1+	2+	11-	2-	1+	2	1+	1+	1	2-	3-	5	14	13	12	15	C	0.2
21	Q6A	2-	1	2-	2-	3-	3-	2-	1-	14-	2-	2-	2	1+	3	3-	1+	1	7	20	15	16	20		0.3
22	Q9A	1	2-	0+	1-	1+	2	3+	3	13+	1+	1+	1	1+	2-	2+	3+	3	8	22	15	7	31		0.4
23		3	3	3-	3	3+	4+	3	4-	26	3-	3-	3-	3-	3	4-	3-	4-	18	40	30	22	48		1.0
24		3-	1	1+	3-	3	2+	5	2	20	2+	1	2	3-	3+	3	4+	2	14	28	25	15	37		0.8
25		3+	3-	2	2-	1+	2	3	3+	19+	3-	2	2	1+	2+	2	3-	3	11	28	13	16	26		0.6
26	Q8A	3	3	1-	1+	1+	2-	2	1	14	2+	2+	1-	1+	2-	2	2-	1	8	17	12	16	14		0.4
27	Q1	0+	0	0+	1-	1	1-	1-	2-	5+	0+	0	0+	1	1+	1+	1	1	3	7	5	4	8	CC	0.1
28		3+	2	2-	2	1-	0+	2	2+	14+	3-	1+	2	2-	1+	1-	2+	2+	7	16	11	14	13	C	0.4
																	Mean		11	23.3	18.5		21.1		0.59

Day	Three-Hourly Indices Kn								Three-Hourly Indices Ks							
	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8
1	1	3	2-	1-	1	1	1+	3-	1+	2+	2-	1	1+	1+	2	3-
2	3-	3+	3	3+	3+	1+	3-	3+	3-	3+	3+	4-	4-	1+	3	3+
3	3-	3	1	1+	1	2	1+	3-	3	3-	1+	1+	1+	2	2	3+
4	2	1	1	1	2-	1	0	0	3-	1+	1	1+	2-	1+	1-	1
5	1-	1	4-	3-	2	2	1	1+	1+	2-	3+	3	2+	2+	1+	2
6	1+	1+	1+	2+	3+	3	3+	4-	2	1+	2-	2+	3	3	4-	4+
7	4-	3-	2	3-	3+	3-	4-	3	4-	3-	2	3-	3+	3	3+	3+
8	3-	2	3-	2	3-	4+	4-	4-	3	2	3-	2+	3	4+	4+	4-
9	3+	3	2+	4	4+	4	4-	3+	3	3	3-	3	4	4-	4-	3-
10	2+	2-	2-	3-	3+	3-	0+	3-	3+	2	2-	2+	3+	3-	2-	3
11	2+	3-	3-	3-	4-	3-	1	2+	3-	3-	2+	3	3+	3	1+	2+
12	2	1+	1-	2	2-	1+	2-	1+	2+	1+	1+	2-	2-	1+	2	2
13	2	3-	2-	2	1+	3-	4-	2+	2+	2-	2	1+	2-	3	3+	3+
14	2-	2-	1+	1	3	2+	3+	2+	2+	3-	2-	1+	3	3-	3+	2
15	2-	2-	1+	1	2-	2	2+	3-	2	2-	2-	1	1+	3-	3	4-
16	2+	2	2	1-	3+	1	1	1-	3-	2+	3-	1	1-	2-	2-	1+
17	2	1	1+	2-	2+	3	3	3	3-	1+	2-	1+	2	3	3+	4-
18	3+	5-	2+	1+	3-	2	2	2-	5-	5-	3-	1+	2+	2	3-	2
19	2	1+	1+	1	2	3-	2+	1-	2+	2	2-	1	2	3-	3-	1+
20	1	1	2+	1	1+	1	1+	2+	2	2-	2-	1+	2-	1	2-	3-
21	1+	1+	2-	1+	3+	3-	1+	0+	2-	2	2+	2-	3-	3-	1+	1+
22	1-	1+	0+	1	2-	2	3+	3-	2-	1+	1+	2-	2-	3-	3+	3
23	2+	3-	3-	3-	3	4-	3-	3	3-	2+	2+	3-	3+	4	3-	4+
24	2	1-	2-	3-	3+	3-	5-	2	2+	2-	2	3-	3+	3+	4+	2+
25	3-	2	2-	1+	2+	2-	3-	3	3-	2	2	1+	2	2+	3	3
26	2	2+	1-	2-	2-	2	2-	1+	3-	3-	1	1	2-	2-	2-	1
27	0	0	0	1	1	1	1	1	1-	0+	1	1+	2-	1+	1+	1+
28	3-	1+	2	2-	1	1-	2	2+	3	1+	2	2-	1+	1	3-	2+

* Errata: Note that the N and M values of aa published in these tables for January 1974 through January 1977 values were slightly in error. The correct values (resulting in some modifications in the classification of the days C and K) will be given in a supplementary IAGA Bulletin and the Bulletin 32 series. The magnetic tape deposited in World Data Center A for Solar-Terrestrial Physics has been corrected.

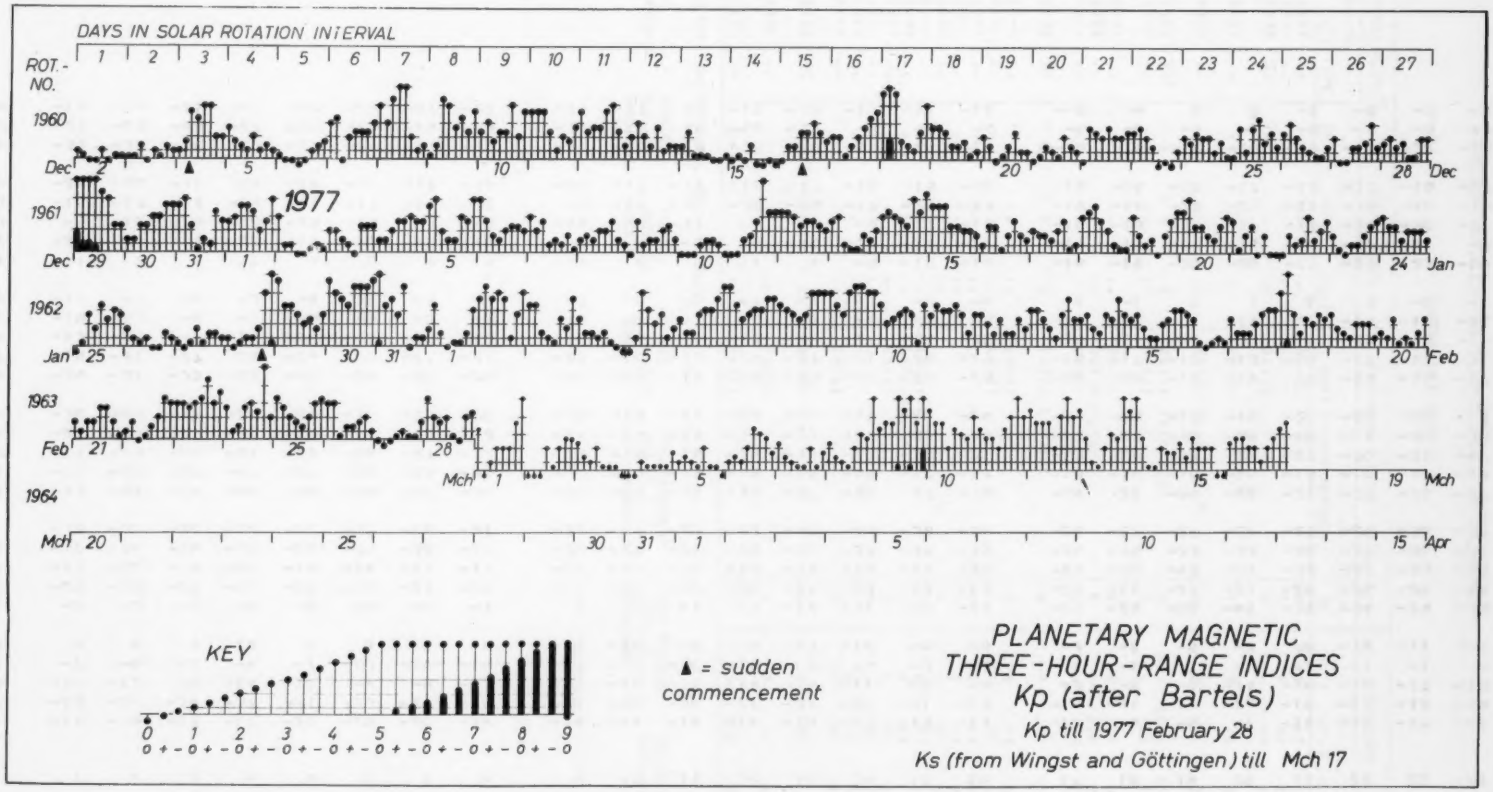
Quiet days (Q) and disturbed days (D), geomagnetic planetary three-hour-range indices (Kp) (integers alone are equivalent to those normally given with a small zero), magnetic character figures (Cp), and average amplitude (Ap) (unit 2γ) prepared by Geophysikalisches Institut at the University of Göttingen, F.R. of Germany for the International Service of Geomagnetic Indices. Ten most quiet days [Q1-Q0(10)] and five most disturbed days [D1-D5] are ordered from most quiet or disturbed, respectively. A or K means "not really quiet" (A = "Ap>6", K = "Ap <6 but one Kp >3o or two Kp values >3-"). An * means "not really disturbed" (Ap<20).

Georagnetic three-hourly indices (Kn), (Ks) and (Km) as in IAGA-Bulletin No. 32 and indices (aa), "antipodal", as in IAGA-Bulletin No. 33 prepared by P. N. Mayaud of the Institut de Physique du Globe, Paris, France. Really quiet (C) and quiet but slightly disturbed three-hourly intervals (K) are given for 24-hour and 48-hour intervals centered on 12 UT.

DAILY AVERAGE INDICES Ap

DAY	1976 MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	1977 JAN	FEB
1	17	107	10	6	18	8	10	14	10	7	17	7
2	32	16	58	6	9	8	24	21	7	3	5	21
3	27	44	94	12	12	10	10	9	6	4	6	11
4	12	30	20	20	14	5	14	6	4	15	10	4
5	15	27	14	20	6	6	9	13	3	6	15	9
6	33	30	8	7	6	5	7	11	2	3	10	14
7	26	27	10	13	9	5	10	6	3	10	7	18
8	42	14	10	8	13	4	7	6	6	23	6	18
9	36	16	4	4	10	12	6	6	8	16	6	25
10	32	12	6	6	6	9	5	6	18	13	3	12
11	27	12	11	26	4	5	4	8	23	13	14	13
12	26	9	7	7	5	3	8	14	24	15	12	7
13	11	13	6	4	4	3	5	8	31	8	7	12
14	14	15	4	3	6	4	10	7	16	4	18	11
15	15	4	5	4	19	2	10	33	9	2	13	8
16	18	8	5	5	16	6	6	29	5	8	7	6
17	20	5	4	14	5	5	10	30	7	10	6	9
18	13	2	3	21	6	4	33	19	5	28	10	17
19	11	5	12	4	6	6	20	7	9	7	8	6
20	8	2	19	5	4	5	51	7	7	5	12	5
21	5	5	11	3	3	8	24	7	4	4	5	7
22	3	19	11	3	4	5	17	5	5	8	7	8
23	5	8	14	4	5	30	12	6	4	5	6	18
24	4	16	6	16	4	25	7	6	3	6	8	14
25	4	9	9	18	9	24	24	5	11	9	9	11
26	138	6	6	7	4	18	13	4	9	6	4	8
27	35	11	5	6	8	13	12	7	8	6	4	3
28	15	10	14	5	16	10	5	5	2	6	13	7
29	15	17	22	5	18	6	10	3	6	45	15	
30	12	10	17	29	19	6	9	16	11	13	30	
31	10		9		7	5		34		12	19	
MEAN	22	17	14	10	9	9	13	12	9	10	10	11

GEOMAGNETIC ACTIVITY INDICES



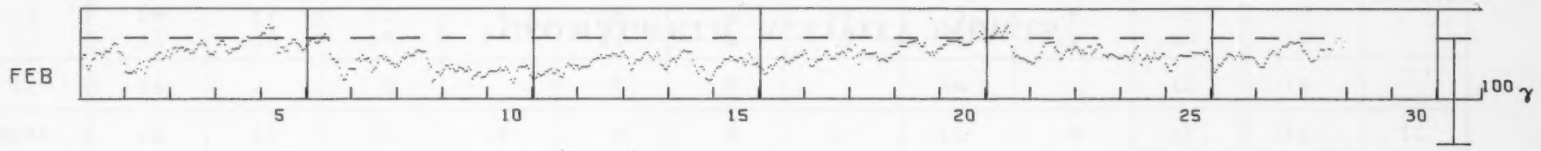
HOURLY EQUATORIAL Dst VALUES (PROVISIONAL)

FEBRUARY 1977

NASA/GODDARD SPACE FLIGHT CENTER

(Time-UT) (Units-Gammas)

DAY	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
1	-19	-16	-17	-27	-30	-26	-20	-19	-14	-14	-16	-19	-16	-13	-13	-13	-10	-6	-5	-7	-14	-15	-17	-15
2	-33	-34	-34	-34	-31	-33	-29	-24	-31	-22	-34	-27	-22	-20	-21	-19	-16	-14	-14	-21	-19	-17	-12	-19
3	-15	-10	-9	-14	-10	-9	-9	-13	-11	-12	-15	-14	-14	-11	-7	-6	-3	-6	-8	-14	-16	-16	-17	-13
4	-7	-6	-3	-4	-7	-13	-15	-14	-11	-12	-10	-10	-8	-4	-3	-3	1	-1	0	-1	-1	-1	-1	2
5	4	4	9	12	9	8	10	-2	-15	-15	-9	-9	-13	-12	-6	-5	-2	-2	-5	-7	-9	-12	-11	-8
6	-6	-3	-1	-2	-5	-6	-4	-1	1	3	-1	-3	-16	-21	-20	-24	-24	-29	-36	-40	-39	-34	-29	-29
7	-29	-29	-20	-19	-22	-16	-21	-21	-19	-24	-33	-30	-28	-23	-17	-18	-20	-18	-22	-21	-25	-25	-28	-25
8	-27	-22	-18	-20	-18	-14	-17	-17	-17	-13	-12	-13	-14	-13	-14	-20	-25	-28	-42	-39	-32	-32	-36	-33
9	-30	-26	-26	-29	-25	-30	-32	-31	-28	-29	-30	-32	-31	-27	-30	-39	-36	-35	-33	-32	-38	-37	-36	-34
10	-32	-31	-32	-32	-32	-30	-28	-31	-31	-27	-30	-33	-40	-43	-38	-31	-28	-27	-27	-27	-26	-29	-36	-38
11	-36	-37	-34	-36	-36	-34	-32	-32	-30	-29	-34	-33	-30	-32	-37	-38	-34	-27	-24	-26	-27	-29	-26	-27
12	-30	-28	-27	-27	-27	-26	-23	-21	-20	-19	-19	-16	-19	-19	-17	-17	-18	-15	-16	-16	-18	-18	-14	-13
13	-17	-19	-25	-31	-29	-24	-21	-22	-22	-19	-16	-14	-14	-17	-19	-21	-18	-14	-17	-26	-27	-30	-31	-27
14	-22	-20	-20	-23	-19	-17	-13	-12	-14	-13	-14	-14	-22	-27	-32	-34	-27	-27	-30	-39	-40	-41	-39	-35
15	-32	-29	-27	-28	-24	-20	-21	-20	-18	-19	-21	-22	-23	-19	-20	-24	-26	-23	-15	-19	-26	-26	-24	-28
16	-29	-31	-35	-33	-28	-26	-30	-26	-24	-21	-19	-18	-20	-23	-23	-25	-22	-22	-19	-19	-19	-17	-16	-12
17	-15	-21	-27	-28	-26	-23	-21	-21	-20	-16	-13	-14	-17	-21	-20	-20	-15	-17	-15	-13	-15	-17	-11	-11
18	-13	-20	-7	-18	-26	-16	-12	-12	-16	-16	-15	-15	-15	-14	-19	-22	-20	-21	-22	-23	-19	-19	-16	-15
19	-15	-13	-8	-8	-8	-9	-5	-4	-4	-3	-3	-2	-6	-8	-9	-5	-14	-15	-17	-14	-17	-14	-11	-10
20	-10	-7	-6	-3	-4	-4	-3	-4	-3	-5	-5	-7	-7	-7	-6	-6	-4	-1	0	1	6	3	-2	-4
21	1	1	2	0	4	6	9	4	1	6	9	11	4	-9	-15	-18	-16	-19	-20	-20	-21	-22	-23	-23
22	-25	-23	-19	-18	-19	-13	-8	-5	-5	-4	-5	-4	-10	-12	-14	-21	-19	-16	-13	-11	-12	-15	-11	-9
23	-9	-12	-15	-12	-15	-15	-8	-8	-16	-13	-11	-6	-6	-9	-17	-18	-19	-16	-15	-17	-18	-19	-20	-20
24	-19	-17	-18	-19	-21	-17	-14	-10	-8	-17	-26	-20	-19	-17	-20	-23	-19	-14	-20	-21	-18	-15	-16	-25
25	-28	-32	-31	-25	-24	-21	-17	-16	-18	-17	-17	-18	-17	-14	-15	-15	-15	-14	-15	-17	-13	-13	-18	-22
26	-30	-33	-30	-25	-27	-24	-21	-19	-15	-16	-17	-18	-20	-17	-14	-18	-20	-18	-18	-19	-19	-18	-20	-23
27	-25	-28	-28	-27	-24	-19	-16	-14	-12	-12	-16	-16	-11	-8	-8	-9	-6	-4	-5	-6	-5	-4	-5	-8
28	-13	-12	-15	-20	-22	-22	-21	-20	-17	-11	-12	-12	-12	-10	-11	-12	-10	-4	0	0	-9	-8	-3	-4



PRINCIPAL MAGNETIC STORMS

FEBRUARY 1977

OBS. 2 letter IAGA code	GEOMAG-NETIC LATI-TUDE	COMMENCEMENT DAY	hr min (UT)	TYPE	SC - AMPLITUDES D(')	H(γ)	Z(γ)	MAXIMUM 3 HOUR - INDEX K DAY(3 HOUR PERIOD)	K	RANGES D(')	H(γ)	Z(γ)	UT END DAY	HOUR
NE	55.1N	1	2157	..	..	..	..	02(2)	5	20	67	52	03	06
BD	48.9N	1	22--	..	..	..	..	02(2)	5	17	82	29	03	05
KG	56.5S	1	2235	SC	..	..	..	02(5)	5	--	--	--	03	03
HD	07.6N	2	0625	..	..	..	..	02(3)	4	3	76	13	03	04
HD	07.6N	5	0300	..	..	..	..	05(3) 06(7) 07(7)	4	3	127	21	07	24
CO	64.6N	6	0940	SC*	- 3	+ 9	+ 6	08(6) 09(4,5,6)	6	161	1120	690	09	23
HR	33.7S	6	18--	..	..	..	..	06(8)	5	14	71	70	07	03
NE	55.1N	8	06--	..	..	..	..	09(5)	5	25	107	84	10	17
HD	07.6N	8	0500	..	..	..	..	08(6) 09(6)	5	4	108	23	10	01
HR	33.7S	8	13--	..	..	..	..	08(7)	5	24	69	79	09	04
HD	07.6N	13	1730	SC	- 0.1	+ 9	- 1	13(7) 14(5)	4	3	81	6	14	22
NE	55.1N	17	15--	..	..	..	..	18(2)	5	20	89	84	18	09
BD	48.9N	17	22--	..	..	..	..	18(2)	5	19	77	28	18	08
JP	17.3N	17	19--	..	..	..	..		-	2	53	22	18	23
SH	14.6N	17	19--	..	..	..	..		-	2	47	14	18	23
UJ	13.5N	17	19--	..	..	..	..		-	2	67	13	18	23
AL	09.5N	17	19--	..	..	..	..	18(1,2)	4	2	57	10	18	23
HD	07.6N	17	1030	..	..	..	..	18(1,2)	4	2	68	9	18	22
GU	04.0N	17	2317	..	..	..	..	18(1)	5	0	70	20	18	09
AN	01.5N	17	19--	..	..	..	..		-	2	81	34	18	23
TV	01.1S	17	19--	..	..	..	..		-	2	100	66	18	23
HR	33.7S	17	21--	..	..	..	..	18(2)	5	15	45	51	18	09
HD	07.6N	19	0540	SC	- 0.3	+13	- 1	19(6)	4	2	78	6	19	21
HD	07.6N	20	1800	..	..	..	..	21(5)	4	2	98	18	21	19
BD	48.9N	22	11--	..	..	..	..	24(7)	5	15	112	29	26	11

Reports were received from the following observatories:

College Witteveen Tucson Jaipur Alibag Annamalaingar Port Moresby Toolangi
Sitka Fredericksburg San Juan Shillong Hyderabad Huancayo Hermanus Port-aux-Francais
Newport Boulder Honolulu Ujjain Guam Trivandrum Gnangara

SUDDEN COMMENCEMENTS AND SOLAR FLARE EFFECTS

FEBRUARY 1977

PRELIMINARY REPORT ON RAPID MAGNETIC VARIATIONS (by Dr. A. Romana)
The meaning of the station symbols is given in the IAGA-Bulletin nr. 32.
Times of ssc are mean values.

Sudden commencements followed by a magnetic storm or a period of storminess (ssc)

None

Solar-flare effects (sfe)

Effects confirmed by ionospheric or solar observations underlined.

10 1611 - 1622 AE
28 1920 - 1935 LG

Very unusual events

03 pc3 0950-1007 WN 42s 9.0γ SZ 40s 1.0γ
0900-1830 FU ∿30s 1.0γ

05 si 1530 A: WN WI; B: FU CI LM

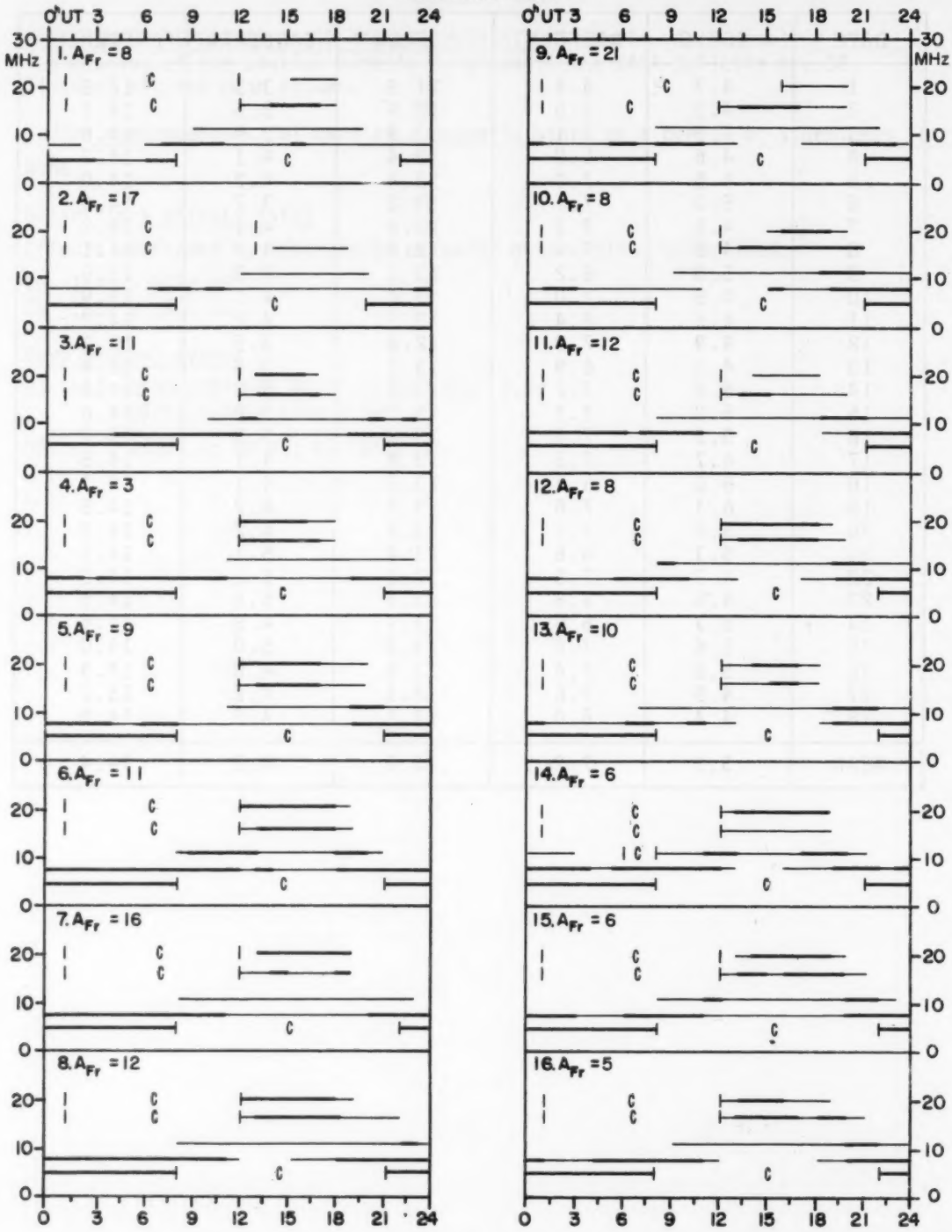
RADIO PROPAGATION QUALITY INDICES

FEBRUARY 1977

DATE	TOKYO	NORFOLK	MOSCOW	CANBERRA	BRACKNELL
1	4.7	5.4	11.5	3.3	12.8
2	4.0	5.5	12.9	3.5	14.1
3	4.3	7.1	12.9	3.9	14.8
4	4.6	6.8	13.4	4.1	14.7
5	4.6	7.0	13.4	4.2	14.9
6	5.0	7.7	13.2	3.7	14.6
7	4.6	7.1	12.4	4.1	14.3
8	4.8	7.4	12.9	4.2	14.1
9	5.0	6.2	13.1	4.3	13.9
10	4.9	7.0	13.4	4.1	13.9
11	4.6	6.4	13.1	4.2	14.2
12	4.9	7.0	12.8	3.5	13.7
13	4.5	6.9	13.1	3.5	14.4
14	5.3	7.7	13.4	4.0	14.4
15	5.3	7.7	13.0	3.8	14.6
16	5.2	7.0	13.1	3.9	13.7
17	4.7	7.3	13.8	4.1	14.5
18	6.0	6.7	13.6	4.1	14.3
19	6.1	7.6	13.7	4.2	14.6
20	5.6	7.5	13.8	4.2	14.5
21	5.1	8.6	13.4	5.1	14.5
22	4.7	7.9	13.1	5.1	14.8
23	4.8	7.8	13.3	5.8	14.8
24	5.7	6.9	13.7	4.8	14.6
25	5.6	7.6	13.3	5.0	15.0
26	5.8	7.4	13.6	4.8	14.9
27	4.9	7.6	13.1	4.2	15.0
28	4.4	8.0	13.1	4.5	14.8
MEAN	5.0	7.2	13.2	4.2	14.4

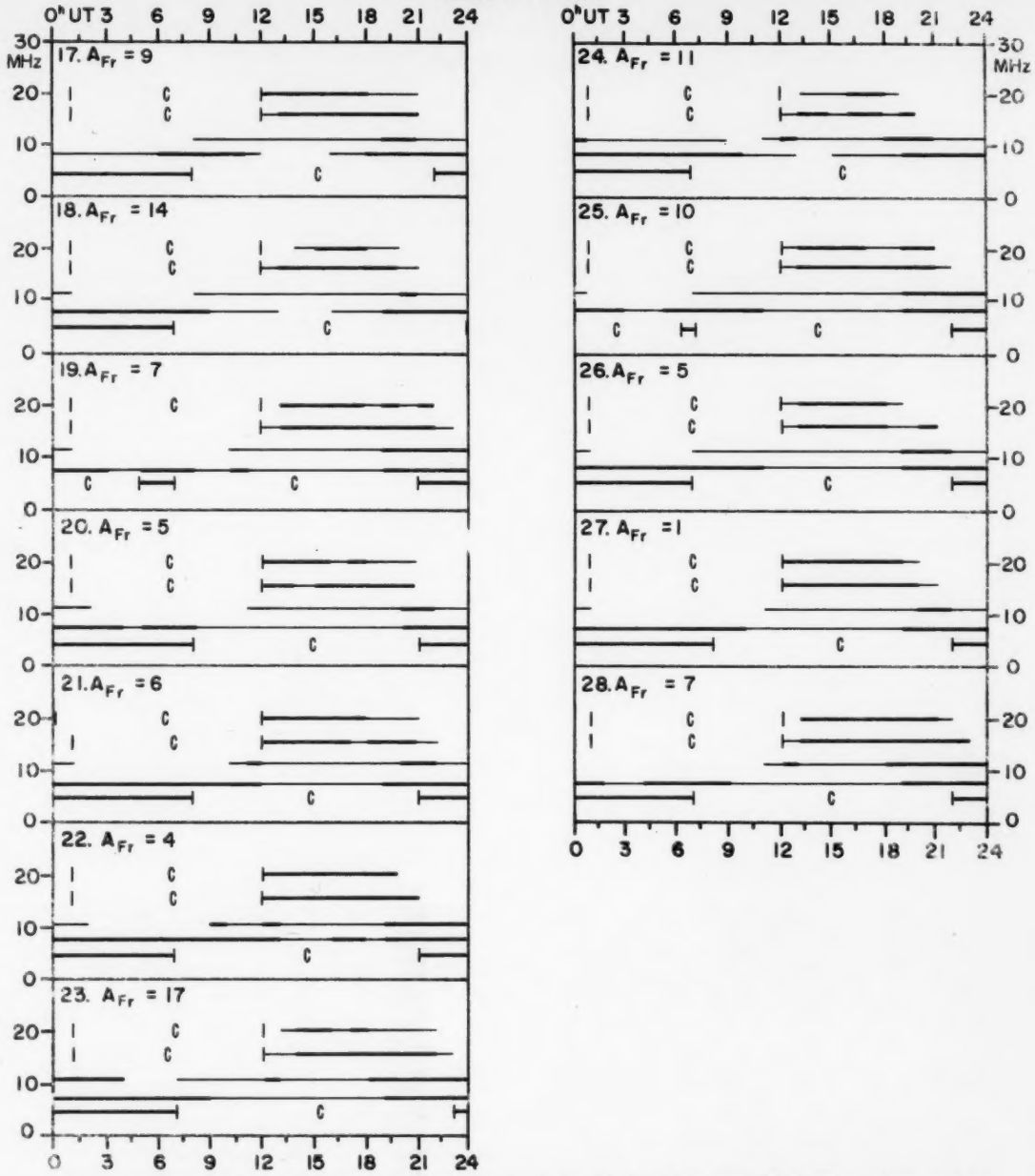
TRANSMISSION FREQUENCY RANGES -- NORTH ATLANTIC PATH

FEBRUARY 1977



TRANSMISSION FREQUENCY RANGES -- NORTH ATLANTIC PATH

FEBRUARY 1977



Field strengths from five frequencies, 5.0, 8.1, 10.9, 16.4 and 20.0 MHz, observed on a Lüchow - Norfolk circuit are represented above. Heavy solid lines represent field strengths ≥-12 dB above 1 μv/m (transmitter power reduced to 1 kW). Observed field strengths between -12 dB above 1 μv/m and -40 dB above 1 μv/m are represented by the fine line.

Adapted from Observations by Deutsche Bundespost

USCOMM-NOAA-ASHEVILLE,NC--4-29-77--950

April 1977 Number 392-Part II

P-A STACKS

Solar-Geophysical Data comprehensive reports

Data for October 1976–September 1976 & Miscellanea

Explanation of Data Reports Issued as Number 390 (Supplement) February 1977

noaa NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION / ENVIRONMENTAL DATA SERVICE / ASHEVILLE, N.C.

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Solar - Geophysical Data

NO. 392 APRIL 1977

Part II (Comprehensive Reports)

DATA FOR
OCTOBER 1976
SEPTEMBER 1976
& MISCELLANEA

NATIONAL GEOPHYSICAL AND SOLAR - TERRESTRIAL DATA CENTER
BOULDER, COLORADO

For obtaining bulletins on a data exchange basis, send request to: World Data Center A for Solar-Terrestrial Physics, NOAA, Boulder, Colorado 80302.

For sale through the National Geophysical and Solar-Terrestrial Data Center, NOAA, Boulder, CO 80302. Subscription Price: $34.00 annually for both Part I (Prompt Reports) and Part II (Comprehensive Reports) or $18.00 annually for either part. Annual supplement containing explanation is included. For foreign mailing add $32.00 for both parts or $16.00 for either part. Single issue price $1.50 for either part and $1.40 for the extra issue. Make checks and money orders payable to: Department of Commerce, NOAA/NGSDC.

To standardize referencing these reports in the open literature, the following format is recommended:

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SOLAR - GEOPHYSICAL DATA

No. 392

Issued in two parts

Helen E. Coffey, Editor

J. Virginia Lincoln, Director
Solar - Terrestrial Data Services Division

CONTENTS

Part I (Prompt Reports)

	Page
Index for 1976 and 1977	2
Data for March 1977	3-23
Data for February 1977	25-105

Part II (Comprehensive Reports)

Index for 1976 and 1977	2
Data for October 1976	3-23
Data for September 1976	25-35
Miscellaneous Data	37-38

Geomagnetic Indices
Sudden Commencements and Solar Flare Effects - January 1977

INDEX FOR 1976 - 1977 DATA PUBLISHED IN "SOLAR-GEOPHYSICAL DATA"

		1976 Aug	Sep	Oct	Nov	Dec	1977 Jan	Feb	Mar
A.	Solar and Interplanetary Phenomena								
A.1	Sunspot Drawings	386A 22	387A 26	388A 26	389A 26	390A 28	391A 34	392A 28	
A.2a	Zürich Provisional Relative Sunspot Numbers R_Z	385A 7	386A 7	387A 7	388A 7	389A 7	390A 7	391A 7	392A 7
A.2b	Zürich Final Sunspot Numbers R_Z	391A 6	391A 6	391A 6	391A 6	391A 6			
A.2c	American Relative Sunspot Numbers R_A'	385A 7	386A 7	387A 7	388A 7	389A 7	390A 7	391A 7	392A 7
A.3a	Mt. Wilson Magnetograms	386A 22	387A 26	388A 26	389A 26	390A 28	391A 34	392A 28	
A.3b	Mt. Wilson Magnetic Characteristics of Sunspots	386A 84	387A 86	388A 88	389A 86	390A 90	391A 96	392A 84	
A.3c	Kitt Peak Magnetograms	386A 22	387A 26	388A 26	389A 26	390A 28	391A 34	392A 28	
A.3d	Mean Solar Magnetic Field (Stanford)	390A 21	390A 21	390A 21	390A 21	390A 21	390A 21	391A 29	392A 21
A.4	Hα Spectroheliograms	386A 22	387A 26	388A 26	389A 26	390A 28	391A 34	392A 28	
A.5	Calcium Plage Drawings - McMath (or Catania)	386A 22	387A 26	388A 26	389A 26	390A 28	391A 34	392A 28	
A.5a	Calcium Plage (McMath) and Sunspot Regions	386A 84	387A 86	388A 88	389A 86	390A 90	391A 96	392A 84	
A.5b	McMath Daily Calcium Plage Indices	386A 89	387A 93	388A 94	389A 90	390A 95	391A101	392A 88	
A.6	Hα Synoptic Charts	386A 20	387A 26	388A 26	389A 26	390A 26	391A 32	392A 26	
A.6b	Synoptic Chart and Active Regions (Paris)	390B 4	391B 4	392B 4					
A.7f	Helium D3 Chromosphere (Big Bear)	385A 21	---	387A 20	388A 21	389A 21	390A 18	391A 22	392A 18
A.7g	Helium Synoptic Maps (KPNO)						390A 19	391A 23	392A 19
A.7h	Coronal Line Emission (Sac Peak)						391A 34	392A 28	
A.8aa	2800 MHz - Daily Values of Solar Flux (ARO-Ottawa)	385A 7	386A 7	387A 7	388A 7	389A 7	390A 7	391A 7	392A 7
A.8ac	2800 MHz - Daily Values of Adj. Solar Flux (ARO-Ottawa)	385A 7	386A 7	387A 7	388A 7	389A 7	390A 7	391A 7	392A 7
A.8g	Daily Values of Adjusted Solar Flux (AFGL)	385A 7	386A 7	387A 7	388A 7	389A 7	390A 7	391A 7	392A 7
A.9cb	8.6 mm Radio Maps of the Sun (NELC - La Posta)	386A 22	387A 26	388A 26	389A 26	390A 28	391A 34	392A 28	
A.9d	2 cm Radio Maps of the Sun (NELC - La Posta)	386A 22	387A 26	388A 26	389A 26	390A 28	391A 34	392A 28	
A.10a	169 MHz - Interferometric Observations (Nancay)	---	386A 12	387A 12	388A 12	389A 12	390A 12	391A 13	392A 12
A.10c	21 cm East-West Solar Scans (Fleurs)	385A 14	387A101	388A101	388A 14	389A 14	391B 43	391A 15	
A.10d	43 cm East-West Solar Scans (Fleurs)	385A 15	387A102	388A102	388A 15	389A 15	391B 44	391A 16	
A.10e	10.7 cm East-West Solar Scans (Ottawa-ARO)	385A 13	386A 13	387A 13	388A 13	389A 13	390A 13	391A 14	392A 13
A.11g	Solar X-ray (SMS/GOES)	385A 18	386A 16	387A 18	388A 19	389A 18	390A 15	391A 19	392A 15
A.11h	Solar X-ray (OSO-8; 1975-057A)	386A 22	387A 26	388A 26	389A 26	390A 28	391A 34	392A 28	
A.11i	Solar X-ray (Columbia U.)		391B 25						
A.12ba	Cosmic Ray Protons (Pioneers 6 & 7)	---	386A 15	387A 16	388A 18	---	---	391A 25	---
A.12bb	Cosmic Ray Protons (Pioneers 8 & 9)	---	---	387A 17	---	---	---	391A 27	---
A.12e	Energetic Solar Particles (IMP H & J)	390B 23	391B 20	392B 18					
A.13a	Solar Wind (Pioneers 6 & 7)	---	386A 15	387A 16	388A 18	---	---	391A 25	---
A.13ab	Solar Wind (Pioneers 8 & 9)	---	---	387A 17	---	---	---	391A 27	---
A.13d	Solar Wind from IPS Measurements			387A 15	388A 17	389A 17	390A 24	391A 24	392A 23
A.13e	Solar Plasma (IMP H & J)	390B 22	391B 19	392B 19					
A.17	Interplanetary Magnetic Field (Pioneer 8)	---	---	---	---	---	---	---	---
A.17	Interplanetary Magnetic Field (Pioneer 9)	---	---	387A 17	---	---	---	391A 27	---
A.17c	Inferred IP Magnetic Field	385A 22	386A 18	387A 21	388A 22	389A 22	390A 20	391A 28	392A 20
A.18	Interplanetary Electric Field (Pioneer 8)	---	---	---	---	---	---	---	---
A.18	Interplanetary Electric Field (Pioneer 9)	---	---	387A 17	---	---	---	391A 27	---
B.	Ionospheric (and Radio Wave Propagation) Phenomena								
B.52	Graphs of Transmission Frequency Range	386A112	387A116	388A116	389A110	390A116	391A118	392A104	
B.53	Quality Figures Based on Frequency Ranges	386A114	387A118	388A118	389A109	390A118	391A120	392A103	
C.	Flare-Associated Events								
C.1a	Optical Observations Flares	385A 10	386A 10	387A 10	388A 10	389A 10	390A 10	391A 11	392A 10
C.1ba	Optical Observations Flares (Standardized Data)	390B 6	391B 8	392B 8					
C.1d	Flare Patrol Observations	385A 11	386A 11	387A 11	388A 11	389A 11	390A 11	391A 12	392A 11
C.1d	Flare Patrol Observations	390B 11	391B 13	392B 13					
C.1e	Flare Indices (by day)	390B 10	391B 12	392B 12					
C.1f	Flare Indices (by Region)	391B 39	392B 35						
C.3	Solar Radio Waves - Outstanding Occurrences	390B 12	391B 14	392B 14					
	Solar Radio Waves - Fixed Frequencies - Selected	385A 16	386A 14	387A 14	388A 16	389A 16	390A 14	391A 17	392A 14
C.3t	43.25, 80 and 160 MHz Selected Bursts (Culgoora)	390B 42	390B 43	390B 44	391B 45	391B 46			
C.4a	Solar Radio Spectral Obs. (Fort Davis)	386A 91	387A 95	388A 96	389A 92	390A 97	391A103	392A 90	
C.4b	Solar Radio Spectral Obs. (Boulder)	---	---	---	---	---	---	---	
C.4d	Solar Radio Spectral Obs. (Culgoora)	387B 32	389B 29	389B 32	389A 92	391B 47	391A103		
C.4e	Solar Radio Spectral Obs. (Weissenau)	386A 91	387A 95	388A 96	389A 92	390A 97	391A103	392A 90	
C.4f	Solar Radio Spectral Obs. (Sagamore Hill)	386A 91	387A 95	388A 96	389A 92	390A 97	391A103	392A 90	
C.4h	Solar Radio Spectral Obs. (Dwingeloo)	386A 91	387A 95	388A 96	389A 92	390A 97	391A103	392A 90	
C.4i	Solar Radio Spectral Obs. (Dürnten)	386A 91	387A 95	388A 96	389A 92	390A 97	391A103	392A 90	
C.4j	Solar Radio Spectral Obs. (Manila)	386A 91	387A 95	388A 96	389A 92	390A 97	391A103	392A 90	
C.5e	Solar X-ray (SMS/GOES)	385A 20	---	---	---	389A 20	390A 17	391A 21	392A 17
C.5f	Solar X-ray (Columbia U.)								
C.6	Sudden Ionospheric Disturbances	386A 90	387A 94	388A 95	389A 91	390A 96	391A102	392A 89	
D.	Geomagnetic and Magnetospheric Phenomena								
D.1a	Geomagnetic Indices Kp, Kn, Ks, Km, Ap, aa, Cp	386A104	387A108	388A108	389A102	390A107	391A114	392A 97	
D.1ba	27-day Chart of Kp Indices	386A106	387A110	388A110	389A104	390A109	391A116	392A 99	
D.1c	27-day Chart of C9					390A110			
D.1d	Principal Magnetic Storms	386A109	387A113	388A113	389A107	390A114	391A117	392A101	
D.1e	Reduced Magnetograms	---			---	---			
D.1f	Sudden Commencement and Solar Flare Effects	386A110	387A114	388A114	389A108	390A115	392B 38	392A102	
D.1g	Equatorial Indices Dst	386A108	387A112	388A112	389A106	390A113		392A100	
F.	Cosmic Rays								
F.1a	Cosmic Ray Neutron Counts (Deep River)	386A 99	387A103	388A103	389A 97	390A106	391A109		
F.1b	Cosmic Ray Neutron Counts (Climax)	386A 99	387A103	388A103	389A 97	390A106	391A109	392A 96	
F.1e	Cosmic Ray Neutron Counts (Alert)	386A 99	387A103	388A103	389A 97	390A106	391A109		
F.1f	Cosmic Ray Neutron Counts (Calgary)	386A 99	387A103	388A103	389A 97	390A106			
F.1g	Cosmic Ray Neutron Counts (Sulphur Mountain)	386A 99	387A103	388A103	389A 97	390A106			
F.1h	Cosmic Ray Neutron Counts (Thule)	---	---	---	---				
F.1i	Cosmic Ray Neutron Counts (Kiel)	386A 99	387A103	388A103	389A 97	390A106	391A109	392A 96	
F.1j	Cosmic Ray Neutron Counts (Tokyo)	386A 99	387A103	388A103	389A 97	390A106	391A109	392A 96	
H.	Miscellaneous								
H.60	IUWDS Alert Decisions	385A 5	386A 5	387A 4	388A 5	389A 4	390A 4	391A 5	392A 5
H.62	Abbreviated Calendar Record	391B 32	392B 28						

Note: A = Part I, B = Part II.

386A 22 listed under 1976 Aug shows that data for August 1976 were contained in *Solar-Geophysical Data* Number 386 - Part I beginning on page 22.

OCTOBER 1976 DATA

Contents

	Page
Active Regions	4-5
Synoptic Solar Map	6-7
Solar Flares	
Hα Solar Flares (Standardized Data)	8-11
Daily Flare Indices	12
No-Flare-Patrol Chart	13
Solar Radio Waves	
Worldwide Outstanding Occurrences at Fixed Frequencies	14-17
Energetic Solar Particles and Plasma	18-23
Solar X-Ray Radiation (Data not available at time of publication)	
Magnetograms of Geomagnetic Storm (October 14-17, 1976 interval not available at time of publication)	

ACTIVE REGIONS

CARRINGTON ROTATION 1646

(September 13 - October 10, 1976)

Region No.	Coordinates		Age at CMP	IMP.	Spot-less Region	Region No. in Rotation 1645	Activity at West Limb
	Lat.	Long.					
1	26°N	329°	0	1	x		disappeared
2	20 N	276	+2	1	x		dispersed
3	13 S	271	>6	1	x	1645(1)	dispersed
4	12 S	265	>6	2			decreasing
5	14 S	256	>6	1	x	1645(2)	dispersed
6	22 N	225	>6	1	x		decreasing
7	18 N	218	>6	1	x		dispersed
8	22 N	173	-4	1	x		stable
9	28 N	172	-1	1	x		decreasing
10	33 N	129	0	2			decreasing
11	18 N	126	>6	3		1645(6)	decreasing
12	28 S	125	>6	2			decreasing
13	26 N	112	>6	1	x	1645(6)	dispersed
14	1 N	86	-5	1	x		(?)
15	17 N	81	-4	1	x		decreasing
16	5 S	30	+5	1	x		disappeared
17	24 S	28	>6	1	x	1645(10)	dispersed
18	24 S	13	>6	1	x		decreasing

ACTIVE REGIONS

CARRINGTON ROTATION 1647

(October 10 - November 7, 1976)

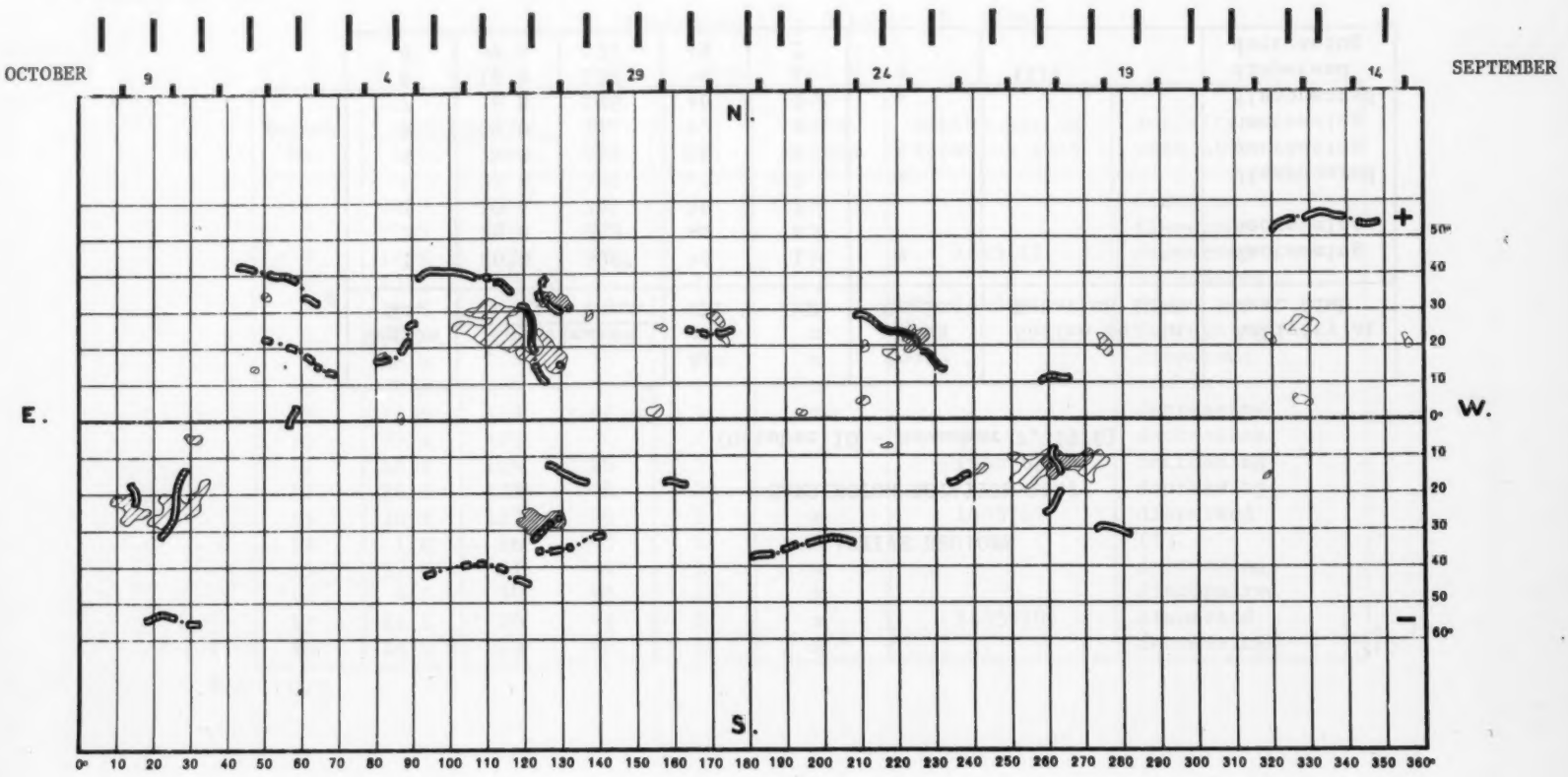
Region No.	Coordinates		Age at CMP	IMP.	Spot-less Region	Region No. in Rotation 1646	Activity at West Limb
	Lat.	Long.					
1	26°N	309°	>6	1	x		decreasing
2	28 S	288	+4	4			decreasing
3	10 S	265	>6	2			
4	22 N	234	-3	1	x		disappeared
5	24 S	211	>6	1	x		decreasing
6	29 N	191	+2	4			decreasing
7	6 N	176	+6	1	x		disappeared
8	18 N	128	>6	1	x	(11)	dispersed
9	29 S	121	+5	2			decreasing

SYNOPTIC SOLAR MAP

CARRINGTON ROTATION 1646

SEPTEMBER 13 TO OCTOBER 10, 1976

MEUDON OBSERVATORY

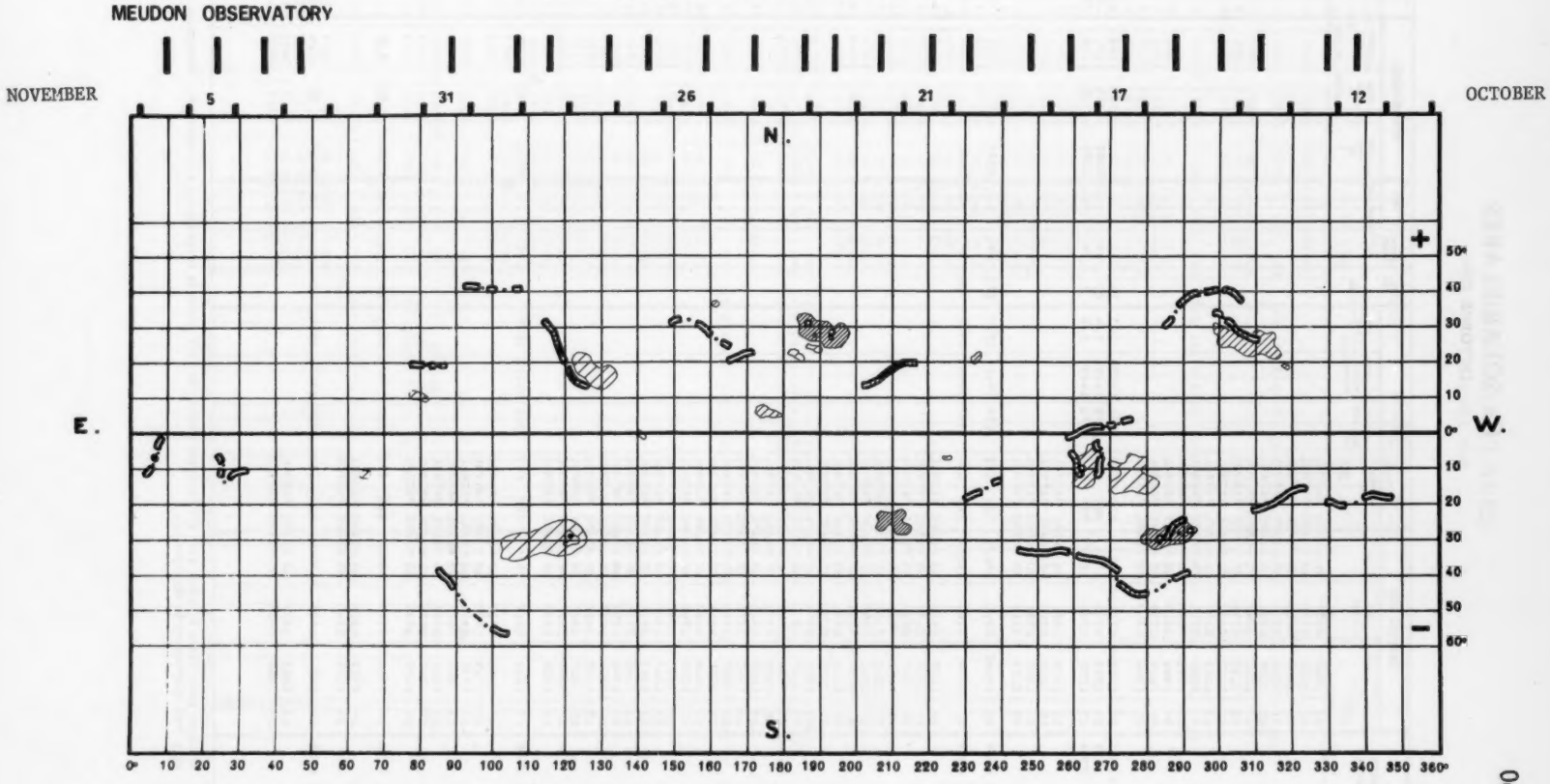


SYNOPTIC SOLAR MAP

CARRINGTON ROTATION 1647

OCTOBER 10 TO NOVEMBER 7, 1976

MEUDON OBSERVATORY



7 Oct 76

Hα SOLAR FLARES

OCTOBER 1976

OBSERV-ATORY	OBSERVED UT				LOCATION					DURA-TION	IMPOR-TANCE	OBS.		MEASUREMENTS			REMARKS	
	DATE OCT	START	MAX. PHASE	END	APPROX LAT.	APPROX LONG. DIST.	CENTRAL DISTANCE	McMATH PLAGE REGION	CMP DAY	MIN.		COND	TYPE	TIME UT	MEAS. AREA Mill. of Disk	CORR AREA Sq. Deg.		
	01	1945	2007	NO FLARE PATROL														
	01	2125	2134	NO FLARE PATROL														
	01	2205	2213	NO FLARE PATROL														
	02	1945	2011	NO FLARE PATROL														
	02	2108	2255	NO FLARE PATROL														
	02	2330	2348	NO FLARE PATROL														
	03	0100	0106	NO FLARE PATROL														
	03	0112	0120	NO FLARE PATROL														
	03	0153	0155	NO FLARE PATROL														
	03	0200	0215	NO FLARE PATROL														
	03	1945	2208	NO FLARE PATROL														
	04	1944	2015	NO FLARE PATROL														
	04	2115	2230	NO FLARE PATROL														
	05	1346	1347	NO FLARE PATROL														
GRP63603	05	1709>9	1726+0	1733	N29	W59	.864	14454	1.3	24	-F	3	C	0000	38	.6	D	
RAMY	05	1709	1726	1734	N28	W58	.855	14454	1.4	25	-F		C		26		DE	
MCMA	05	1725	1726	1732	N30	W60	.873	14454	1.2	7	-N		C	1726	30	.6	D	
	05	1819	1851	NO FLARE PATROL														
	05	1853	1919	NO FLARE PATROL														
	05	1929	2051	NO FLARE PATROL														
	05	2129	2213	NO FLARE PATROL														
604 KHAR	06	0846E	0846	0913D	S24	E52	.658	14468	10.3	27D	-F		C	0000			D	YS
605 KHAR	06	1104	1104	1112D	S23	E51	.847	14468	10.3	8D	-F		C	0000			D	YS
	06	1632	1653	NO FLARE PATROL														
	06	1708	2023	NO FLARE PATROL														
	06	2207	2225	NO FLARE PATROL														
	07	1621	2012	NO FLARE PATROL														
	07	2208	2206	NO FLARE PATROL														
	08	1542	2250	NO FLARE PATROL														
	09	0154	0206	NO FLARE PATROL														
	09	0215	0234	NO FLARE PATROL														
	09	0238	0249	NO FLARE PATROL														
	09	1621	2014	NO FLARE PATROL														
	09	2147	2203	NO FLARE PATROL														
	09	2336	2340	NO FLARE PATROL														
	10	0108	0221	NO FLARE PATROL														
	10	1610	1920	NO FLARE PATROL														
	10	1941	2220	NO FLARE PATROL														
	11	1507	1509	NO FLARE PATROL														
	11	1521	1616	NO FLARE PATROL														
	11	1618	1633	NO FLARE PATROL														
	11	1728	1748	NO FLARE PATROL														
	11	1800	1820	NO FLARE PATROL														
	11	1847	1925	NO FLARE PATROL														
	11	1943	2033	NO FLARE PATROL														
	11	2142	2155	NO FLARE PATROL														
	12	1348	1353	NO FLARE PATROL														
	12	1520	1527	NO FLARE PATROL														
	12	1557	1608	NO FLARE PATROL														
	12	1817	1821	NO FLARE PATROL														
	12	1850	1901	NO FLARE PATROL														
	12	1938	2253	NO FLARE PATROL														
606 MCMA	13	1611	1612	1616	S08	E65	.916	14476	10.5	5	-F		C	1612	25	.6	DL	YS
	13	1655	1707	NO FLARE PATROL														
	13	1719	1728	NO FLARE PATROL														
	13	1732	1855	NO FLARE PATROL														
	13	1857	2032	NO FLARE PATROL														
	13	2217	2302	NO FLARE PATROL														
	13	2340	0025	NO FLARE PATROL														
	14	0125	0500	NO FLARE PATROL														
607 CATA	14	0910	0910	0928	S10	E53	.821	14476	10.4	10	-N	2	C	0910	56	1.0		YS
	14	0923	0926	NO FLARE PATROL														
	14	1225	1249	NO FLARE PATROL														
608 MCMA	14	1424	1427	1431	S07	E50	.783	14476	10.4	7	-N		C	1427	25	.4	D	YS
	14	1802	1837	NO FLARE PATROL														
	14	1902	1918	NO FLARE PATROL														

Note: Although these flare listings give all reported events, not all possible brightenings are reported. Thresholds of reporting vary from observatory to observatory.

Hα SOLAR FLARES

OCTOBER 1976

OBSERVATORY	OBSERVED UT				LOCATION					DURATION	IMPORTANCE	OBS.		MEASUREMENTS			REMARKS
	DATE 1976 OCT	START	MAX. PHASE	END	APPROX LAT.	APPROX HER. DIST.	CENTRAL DISTANCE	McMATH PLAGE REGION	CMR DAY	MIN.		CONF.	TYPE	TIME UT	MEAS. AREA Mill. of Disk	CORR. AREA Sq. Deg.	
	14	1921	2230	NO FLARE PATROL													
609 MCMA	15	1846	1858	1914	S09	E33	.589	14476	18.3	28	-N		C	1858	120	1.5	EKL Y5
	15	1924	2031	NO FLARE PATROL													
	15	2210	2221	NO FLARE PATROL													
	16	0220	0225	NO FLARE PATROL													
610 KIEV	16	1128E	1131	1145D	S29	E06	.578	14475	16.9	17D	-F		C	1131	150	1.9	DI Y5
	16	1543	1638	NO FLARE PATROL													
	16	1641	0112	NO FLARE PATROL													
	17	0139	0242	NO FLARE PATROL													
	17	0347	0358	NO FLARE PATROL													
	17	0518	0520	NO FLARE PATROL													
	17	0531	0548	NO FLARE PATROL													
	17	1116	1147	NO FLARE PATROL													
	17	1649	1657	NO FLARE PATROL													
	17	1702	1716	NO FLARE PATROL													
	17	1729	2003	NO FLARE PATROL													
	17	2036	2116	NO FLARE PATROL													
	17	2134	2255	NO FLARE PATROL													
	18	0215	0221	NO FLARE PATROL													
	18	0226	0235	NO FLARE PATROL													
	18	0248	0254	NO FLARE PATROL													
	18	1701	1718	NO FLARE PATROL													
	18	1724	1739	NO FLARE PATROL													
	18	2157	2330	NO FLARE PATROL													
	19	0010	0034	NO FLARE PATROL													
	19	0038	0113	NO FLARE PATROL													
	19	0118	0228	NO FLARE PATROL													
	19	0244	0257	NO FLARE PATROL													
	19	0300	0304	NO FLARE PATROL													
	19	0347	0356	NO FLARE PATROL													
	19	1608	1704	NO FLARE PATROL													
GRP63611	19	1701E	1710	1736	S28	W42	.794	14475	16.6	35	-N						FU
PALE	19	1701E	1710	1736	S28	W42	.794	14475	16.6	35D	-N	2	C	0000	120		U F
PALE	19	1701E	1710	1736	S28	W42	.794	14475	16.6	35D	-N	2	C	0000	120		U F
	19	1727	2350	NO FLARE PATROL													
612 PALE	19	1741	1745	1752	S29	W42	.800	14475	16.6	11	-B	3	C	0000	80		DE Y5
	20	0016	0036	NO FLARE PATROL													
	20	0118	0125	NO FLARE PATROL													
	20	0248	0435	NO FLARE PATROL													
	20	1705	1722	NO FLARE PATROL													
	20	1948	1955	NO FLARE PATROL													
	20	2035	2045	NO FLARE PATROL													
	20	2123	2348	NO FLARE PATROL													
	20	2353	0130	NO FLARE PATROL													
	21	0135	0155	NO FLARE PATROL													
	21	0212	0220	NO FLARE PATROL													
	21	0650	0700	NO FLARE PATROL													
	21	1057	1101	NO FLARE PATROL													
	21	1604	1631	NO FLARE PATROL													
	21	1713	1736	NO FLARE PATROL													
	21	1746	1803	NO FLARE PATROL													
	21	1833	2215	NO FLARE PATROL													
613 MONT	22	0903	0906	0911	S17	W90	1.000		15.6	8	-F		C	0906	20		Y5
GRP63614	22	0942+1	0944+2	0951	N19	E81	.984	14497	28.5	9	-F				30		DG
HTPR	22	0942	0944	0949	N20	E80	.981	14497	28.4	7	-F		C	0944	20		
MONT	22	0943	0946	0952	N18	E82	.987	14497	28.6	9	-F		C	0946	40		DG
	22	1627	1905	NO FLARE PATROL													
615 PALE	22	1902	1907U	2003	N29	E12	.442	14494	23.7	61	-F	2	C	0000	64		Y5
	22	1915	1922	NO FLARE PATROL													
	22	2009	2015	NO FLARE PATROL													
	22	2119	2210	NO FLARE PATROL													
	22	2249	2250	NO FLARE PATROL													
	22	2255	2314	NO FLARE PATROL													

Hα SOLAR FLARES

OCTOBER 1976

OBSERVATORY	OBSERVED UT				LOCATION					DURATION	IMPORTANCE	OBS.		MEASUREMENTS			REMARKS
					APPROX		CENTRAL DISTANCE	McMATH PLAGE REGION	CMR DAY								
	DATE 1976 OCT	START	MAX PHASE	END	LAT.	MER DIST.				MIN.		CONF.	TYPE	TIME UT	MEAS. AREA Mill. of Disk	CORR AREA Sq. Deg.	
616 MITK	23	0043	0048	0055	S24	W90	1.001	14475	16.3	12	1F		C	0048	120		G Y5
GRP63617	23	0939>9	0946	1021	N28	E04	.392	14494	23.7	42	-N						E
MONT	23	0939	0946	1021	N28	E05	.395	14494	23.8	42	-B		C	0946	40		E
WEND	23	1009	0000	1021	N29	E04	.406	14494	23.7	12	-N			0000			
	23	1606	1655	NO FLARE PATROL													
	23	1658	1709	NO FLARE PATROL													
	23	1725	1853	NO FLARE PATROL													
	23	1913	1934	NO FLARE PATROL													
	23	2009	2017	NO FLARE PATROL													
	23	2151	2204	NO FLARE PATROL													
	23	2306	2317	NO FLARE PATROL													
	24	0028	0038	NO FLARE PATROL													
	24	1356	1419	NO FLARE PATROL													
	24	1905	1915	NO FLARE PATROL													
	24	1921	2034	NO FLARE PATROL													
	24	2158	2217	NO FLARE PATROL													
	25	0040	0052	NO FLARE PATROL													
	25	0827	0834	NO FLARE PATROL													
	25	0847	0853	NO FLARE PATROL													
	25	1629	1644	NO FLARE PATROL													
	25	1833	1843	NO FLARE PATROL													
	25	2000	2018	NO FLARE PATROL													
	25	2030	2141	NO FLARE PATROL													
	25	2205	2238	NO FLARE PATROL													
	25	2300	2313	NO FLARE PATROL													
	25	2321	2359	NO FLARE PATROL													
	26	0700	0702	NO FLARE PATROL													
	26	0738	0818	NO FLARE PATROL													
	26	1635	1659	NO FLARE PATROL													
	26	1834	1932	NO FLARE PATROL													
	26	1950	2016	NO FLARE PATROL													
	26	2026	2056	NO FLARE PATROL													
	26	2124	2128	NO FLARE PATROL													
	26	2205	2218	NO FLARE PATROL													
	26	2234	2251	NO FLARE PATROL													
618 HTPR	27	0947E	0000	0954D	N35	W45	.780	14494	24.8	7D	-F		C	0949	30	.5	E Y5
619 RAMY	27	1058	1115	1122	N27	W49	.784	14494	23.8	24	-N	4	C	0000	44		F H Y5
	28	0015	0029	NO FLARE PATROL													
	28	0034	0045	NO FLARE PATROL													
	28	0053	0111	NO FLARE PATROL													
	28	0128	0136	NO FLARE PATROL													
	28	0143	0145	NO FLARE PATROL													
	28	0230	0235	NO FLARE PATROL													
	28	0240	0252	NO FLARE PATROL													
620 ATHN	28	0918	0921	0924	N30	W69	.936	14494	23.2	6	-F	1		0921	33	119.0	Y5
GRP63621	28	0943+2	0945+5	1000	N29	W67	.925	14494	23.4	17	-N				60		
ATHN	28	0943	0945	0956	N30	W69	.936	14494	23.2	13	-N	1		0945	33	119.0	
CATA	28	0945	0950	1000D	N28	W65	.912	14494	23.5	15D	-N		P	0950	56		
UPIC	28	0945E	0945	1000	N29	W67	.925	14494	23.4	15D	1F		P	0945	62		
622 UPIC	28	1130E	1130	1145	N29	W61	.886	14494	23.9	15D	?F		P	1130	102		Y5
	IMP>1 NO > RAMY2 CATA1																
	28	1947	1954	NO FLARE PATROL													
623 MCMA	29	1740	1742	1750	N32	W80	.982	14494	23.7	10	-N		C	1742			D Y5
624 MCMA	29	1826	1828	1832	N29	W78	.975	14494	23.9	6	-N		C	1828			D Y5
GRP63625	29	1908+7	1913+8 1923	1940D	N28	W84	.991	14494	23.5	32	-F						
RAMY	29	1908E	1913U	1929D	N28	W85	.993	14494	23.4	21D	-F	*	V	0000			FDE
RAMY	29	1908E	1913U	1929D	N28	W85	.993	14494	23.4	21D	-F	*	C	0000			FDE
MCMA	29	1915	1923	1940D	N28	W83	.989	14494	23.6	25D	1F	*	C	1923			E
	29	2003	2027	NO FLARE PATROL													
	29	2332	2340	NO FLARE PATROL													
	30	0044	0048	NO FLARE PATROL													
	30	0845	0850	NO FLARE PATROL													
	30	1100	1101	NO FLARE PATROL													

Hα SOLAR FLARES

OCTOBER 1976

OBSERVATORY	OBSERVED UT				LOCATION					DURATION	IMPORTANCE	OBS.		MEASUREMENTS			REMARKS
	DATE OCT	START	MAX. PHASE	END	APPROX LAT.	APPROX MER. DIST.	CENTRAL DISTANCE	McMATH PLAGE REGION	CMP. DAY	MIN.		CONF.	TYPE	TIME UT	MEAS. AREA Mill. of Disk	CORR. AREA Sq. Deg.	
	30	1105	1121	NO FLARE PATROL													
	30	1241	1247	NO FLARE PATROL													
	30	1321	1324	NO FLARE PATROL													
	30	1415	1432	NO FLARE PATROL													
	30	1522	1639	NO FLARE PATROL													
	30	1719	1735	NO FLARE PATROL													
	30	1941	2000	NO FLARE PATROL													
	30	2003	2031	NO FLARE PATROL													
	30	2041	2117	NO FLARE PATROL													
	30	2137	2215	NO FLARE PATROL													
	30	2249	0128	NO FLARE PATROL													
	31	0238	0243	NO FLARE PATROL													
	31	0615	0656	NO FLARE PATROL													
	31	0704	0715	NO FLARE PATROL													
	31	0725	0730	NO FLARE PATROL													
	31	0732	0850	NO FLARE PATROL													
	31	0900	0920	NO FLARE PATROL													
	31	0925	1010	NO FLARE PATROL													
	31	1025	1035	NO FLARE PATROL													
	31	1040	1121	NO FLARE PATROL													
	31	1200	1207	NO FLARE PATROL													
	31	1231	1245	NO FLARE PATROL													
	31	1406	1531	NO FLARE PATROL													
	31	1535	1610	NO FLARE PATROL													
	31	1723	1916	NO FLARE PATROL													
	31	1945	1948	NO FLARE PATROL													

"Remarks":

A = Eruptive prominence whose base is less than 90° from central meridian.
B = Probably the end of a more important flare.
C = Invisible 10 minutes before.
D = Brilliant point.
E = Two or more brilliant points.
F = Several eruptive centers.
G = No visible spots in the neighborhood.
H = Flare accompanied by a high speed dark filament.
I = Active region very extended.
J = Distinct variations of plage intensity before or after the flare.
K = Several intensity maxima.
L = Existing filaments show signs of sudden activity.
M = White-light flare.
N = Continuous spectrum shows effects of polarization.
O = Observations have been made in the calcium II lines H and K.
P = Flare shows helium D_3 in emission.
Q = Flare shows the Balmer continuum in emission.
R = Marked asymmetry in Hα line suggests ejection of high velocity material.
S = Brightness follows disappearance of filament (same position).
T = Region active all day.
U = Two bright branches, parallel (||) or converging (Y).
V = Occurrence of an explosive phase: important and abrupt expansion in about a minute with or without important intensity increase.
W = Great increase in area after time of maximum intensity.
X = Unusually wide Hα line.
Y = System of loop-type prominences.
Z = Major sunspot umbra covered by flare.

DAILY FLARE INDICES

Includes all Flares

SEPTEMBER 1976

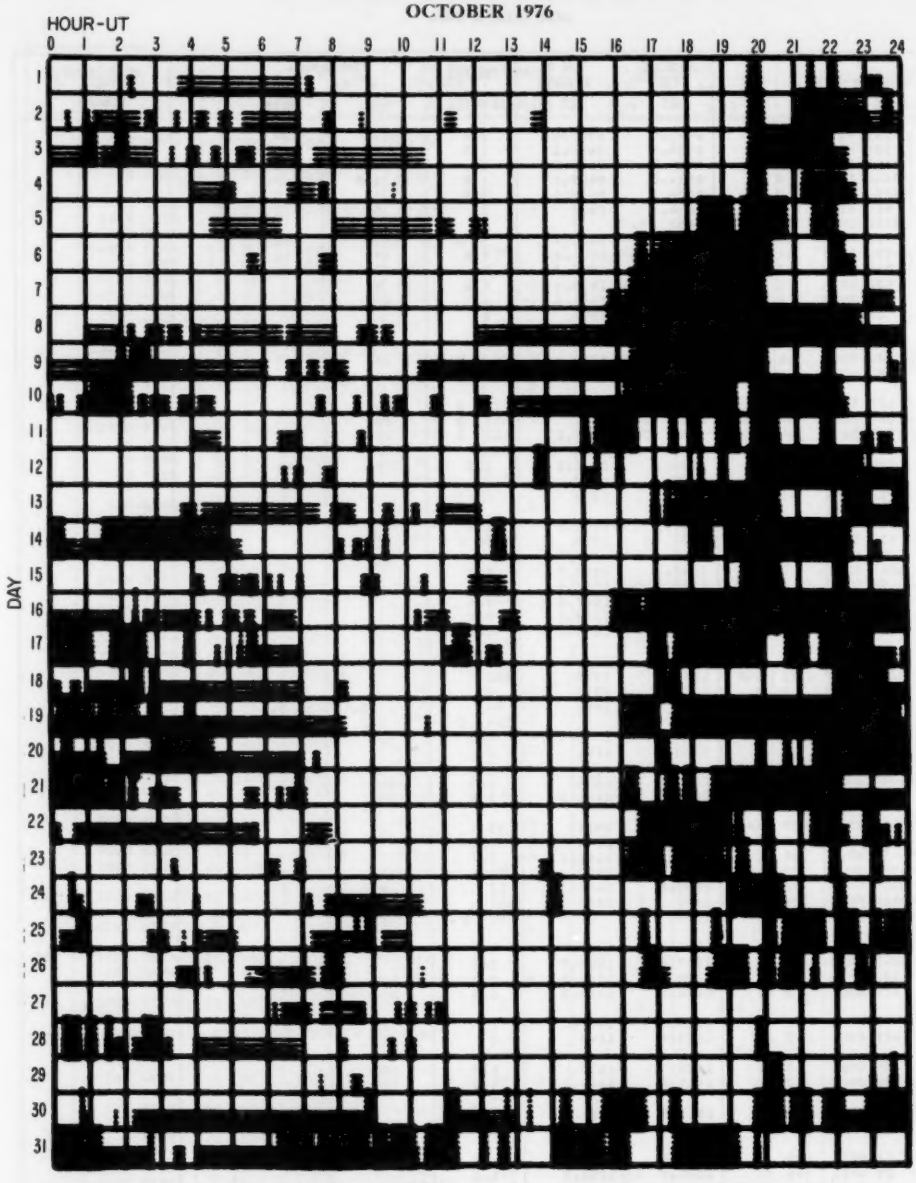
Date	Flare Index	HR. OBS.	Date	Flare Index	HR. OBS.	Date	Flare Index	HR. OBS.
761001	0.00	23.4	761011	0.00	20.6	761021	0.00	18.5
761002	0.00	21.5	761012	0.00	20.0	761022	7.07	20.0
761003	0.00	21.1	761013	1.03	19.2	761023	8.99	20.7
761004	0.00	22.2	761014	5.41	15.9	761024	0.00	21.8
761005	.51	20.9	761015	3.47	22.7	761025	0.00	20.3
761006	3.21	20.1	761016	5.36	14.5	761026	0.00	20.7
761007	0.00	20.1	761017	0.00	17.0	761027	3.80	24.0
761008	0.00	16.9	761018	0.00	21.6	761028	2.75	22.7
761009	0.00	19.1	761019	5.28	14.1	761029	2.56	23.5
761010	0.00	17.0	761020	0.00	17.2	761030	0.00	17.1

When no Flare Index is given, it is 0 for that day.

INTERVALS OF NO FLARE PATROL OBSERVATION

FOR PRECEDING SOLAR FLARE TABLE

OCTOBER 1976



Observatories included in total patrol:

Athenes	Herstmonceux	Kiev	McMath-Hulbert	Tachkent
Bucharest	Huancayo	Kodaikanal	Mitaka	Tehran
Catania	Hurbanovo	Locarno	Monte Mario	Upice
Culgoora	Istanboul	Lvov	Palehua	Voroshilov
Haute Provence	Kharkov	Manila	Ramey	Wendelstein
				Zürich

Times of no flare patrol are shown by the shaded area for each day divided into times of no cinematographic patrol (bottom half of day) and times of neither visual nor cinematographic patrol (top half of day).

SOLAR RADIO EMISSION
OUTSTANDING OCCURRENCES
OCTOBER 1976

OCT 1976	FREQUENCY	STATION	TYPE	STARTING TIME UT	TIME OF MAXIMUM UT	DURATION MINUTES	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1} PEAK	FLUX DENSITY MEAN	INT	POLARIZATION OR REMARKS
1	200	HIRA	45 C	0423.5	0424.6	2.5	970	150		
	100	HIRA	45 C	0424.5	0425.1	1.5	1200	500		
	1000	TYKH	5 S	0424.7	0424.9	1	0.9	0.3		
	2000	TYKH	5 S	0424.8	0425.2	1.2	1.8	0.6		
	3750	TYKH	5 S	0424.8	0425.1	0.7	1	0.3U		
	500	HIRA	5 S	0424.8	0425	1	5	1		
	3100	CRIM	24 R	0732			6			
	100	HIRA	45 C	0802 U	0802.5	1 U	190	50		
	237	TRST	41 F	1151.2	1151.8	1.4	48	11 R		
	260	ONDR	42 SER	1151	1155.3	9	13	2.2		
	536	ONDR	2 S/F	1439.4	1439.4	0.6	8			
	536	ONDR	8 S	1444.4	1444.4	0.3	48			
	18	MCMA	6 S	1525	1526	2			1	
	2695	BOUL	1 S	1536.5	1537.5	1	4	1		
2	200	HIRA	44 NS	2035 E	0206	710 D	33	3		
	287	VORO	44 NS	2200	0230	360	11			
3	127	TORN	44 NS	0620 E	1256.7	520 D	60			
	260	ONDR	44 NS	0730 E		448 D	28			
	245	SGMR	44 NS	1047 E	1234.1	690 D	28			
	287	VORO	44 NS	2200	2220	360	12			
	127	TORN	5 S	1309.8	1310.1	1.2	120	40		
	18	MCMA	6 S	1430	1432	3			1	
	18	MCMA	41 F	1943	1945	5			1	
4	9240	ARCE	1 S	0807.2	0808.2	1.4				
	127	TORN	40 F	0900 U	0938	70 U	2.5			
	260	ONDR	43 NS	0915		349	11			
	9240	ARCE	3 S	1100.7	1100.9	0.5				
	29	UPIC	4 S/F	1107.4	1107.9	0.8				
	33	UPIC	4 S/F	1107.5	1107.6	0.6				
	29	UPIC	8 S	1109.6	1109.7	0.2				
	33	UPIC	8 S	1109.7	1109.7	0.1				
5	3100	CRIM	24 R	0928	0934		3.5			
	9240	ARCE	20 GRF	1134.7	1309	150				
	18	MCMA	6 S	1321	1323	2			1	
	2800	OTTA	240 R	1335	1445	70	1.2	0.6		
	2800	OTTA	24P R	1445		550 D	1.2			
	536	ONDR	8 S	1456.4	1456.4	0.3	31			
	18	MCMA	6 S	1749	1751	2			1	
6	4995	BOUL	45 C	2017.5	2019	2.5	46	18		
	2695	BOUL	45 C	2018.5	2019.5	1.5	22	7		
7	3100	CRIM	27 RP	0950	0955	39	2	1		
	29	UPIC	45 C	1145.2	1146	1.3				
	33	UPIC	45 C	1145.3	1145.7	0.7				
	4995	BOUL	20 GRF	1547	1552	20.5	10	3		
	2695	BOUL	20 GRF	1555.5	1601	12	4	1		
	2695	PENT	240 R	2105	2300	115	2.4	1.2		
	2695	PENT	24P R	2300		65 D	2.4			
8	9240	ARCE	1 S	1013.3	1013.5	0.5				
	9240	ARCE	1 S	1027.4	1027.7	0.8				
	536	ONDR	8 S	1354.2	1354.2	0.3	63			
	536	ONDR	8 S	1452.3	1452.3	0.3	50			
9	2695	BOUL	2 SF	1636.5	1637.5	2	2	1		
	1420	BOUL	2 SF	1839.5	1840	2	2	1		
10	536	ONDR	8 S	1435	1435	0.3	52			
	536	ONDR	8 S	1440.8	1440.8	0.3	28			
11	9240	ARCE	3 S	0803.9	0804.2	1				
	18	MCMA	6 S	1539	1541	2			1	
12	33	UPIC	45 C	1209.8	1210.1	1.7				
	29	UPIC	45 C	1209.9	1210.3	1.6				
13	9240	ARCE	2 S/F	0902.6	0903.6	1.5				
	260	ONDR	4 S/F	0926.3	0927.2	1.5	8	1.4		
	9240	ARCE	40 F	1039.8	1043.6	7.5				
	536	ONDR	8 S	1219.1	1219.1	0.3	74			
	260	ONDR	4 S/F	1230.6	1230.6	1	32	4.2		
	18	MCMA	6 S	1636	1640	4			2	
14	18	MCMA	41 F	1330	1346	24			2	
	18	MCMA	42 SER	1450	1502	20			2	
	18	MCMA	6 S	1529	1531	2			2	
	18	MCMA	6 S	1537	1538	2			1	
	18	MCMA	6 S	1550	1552	2			1	
	18	MCMA	6 S	1555	1557	3			1	

SOLAR RADIO EMISSION
OUTSTANDING OCCURRENCES
OCTOBER 1976

OCT 1976	FREQUENCY	STATION	TYPE	STARTING TIME UT	TIME OF MAXIMUM UT	DURATION MINUTES	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1} PEAK	FLUX DENSITY MEAN	INT	POLARIZATION OR REMARKS
	18	MCMA	6 S	1636	1638	3			1	
	18	MCMA	42 SER	1820	1830	29			2	
	18	MCMA	41 F	2116	2118	3			1	
	18	MCMA	6 S	2136	2138	2			1	
15	9240	ARCE	1 S	0953.8	0954.2	1.2				
	2800	OTTA	26 FAL	1410	1500	50	-0.8	-0.4		
	2800	OTTA	24Q R	1805	1900	55	2.2	1.1		
	2800	OTTA	24P R	1900		120 D	2.2			
	18	MCMA	41 F	1850	1853	9			1	
	1420	BOUL	2 SF	2236.5	2243	9.5	2	1		
	2695	BOUL	1 S	2244	2245	1.5	2	1		
16	18	MCMA	6 S	1808	1809	2			1	
17	2000	TYKW	5 S	0056.3	0056.5	0.5	11	3		
	1000	TYKW	5 S	0056.3	0056.5	0.5	29	7		
	3750	TYKW	5 S	0056.4	0056.5	0.2	5	2		
	1000	TYKW	42 SER	0103	0104.2	3	18	0.9		
	3750	TYKW	5 S	0104.1	0104.3	0.5	1.5	0.4U		
	2000	TYKW	42 SER	0104	0104.3	2	1.7	0.5		
	18	MCMA	6 S	1523	1525	2			1	
	18	MCMA	6 S	1529	1531	3			1	
	18	MCMA	42 SER	1845	2046	121			2	
18	930	BORD	46 C	1000.7	1001	0.7	9	2		
	930	BORD	46 C	1019.2	1019.3	0.5	10	2		
	18	MCMA	6 S	1536	1538	2			1	
	18	MCMA	6 S	2142	2144	2			1	
19	2800	OTTA	20 GRF	1335	1345	40	2.4	0.8		
	2800	OTTA	27A RF	1455		255	0.8	0.6		
	2800	OTTA	24 R	1455	1545	50	0.8	0.4		
	2800	OTTA	24P R	1545		155	0.8			
	2800	OTTA	21 GRF	1647	1705	80	3	1.3		
	2695	SGMR	22 GRF	1656.8	1659.4	10.7	11	6.6		SWF
	4995	SGMR	22 GRF	1657.4	1659.4	10	7.7	4.6		SWF
	1420	BOUL	1 S	1657.5	1700	3.5	2	1		
	8800	SGMR	2 S/F	1657.9	1658.8	9.6	2.6	.8		SWF
	2695	PENT	2 S/F	1657	1659.5	5.5	9.6	3		
	2695	BOUL	23 GRF	1657	1700	17.5	12	3		
	4995	SGMR	2 S/F	1742	1742.6	7.4	3.7	1.1		
	2800	OTTA	2 S/F	1742.4	1742.9	1	5.2	2.6		
	2695	SGMR	4 S/F	1742.5	1742.8	6	11.2	3.3		
	2800	OTTA	26 FAL	1820	1910	50	-0.8	-0.4		
20	9240	ARCE	45 C	0825.9	0827.3	4.2				
	9240	ARCE	2 S/F	0839.2	0839.6	1.2				
	9240	ARCE	1 S	0853.6	0854.2	1.4				
	2800	OTTA	20 GRF	1940	2210	200 D	1.4			
21	9100	GORK	20 GRF	0605	0606	16	8.5	4.2		
	9240	ARCE	2 S/F	1057.9	1058	1.2				
	9240	ARCE	8 S	1114.8	1114.9	0.6				
23	3100	CRIM	26 FAL	1118	1123		2			
	260	ONDR	2 S/F	1245.5	1245.6	1.6	5			
24	2800	OTTA	21 GRF	1610	1619	50	1.6	0.8		
	2800	OTTA	8 S	1616	1616.5	0.7	1	0.5		
	18	MCMA	6 S	1823	1824	2			1	
	2800	OTTA	20 GRF	1845	1904	40	1	0.5		
25	200	GORK	44 NS	0524 E		336 D		9		
	100	GORK	43 NS	0617		223		5		
	127	TORN	44 NS	0650 E	0907.5	400 D	60			
	260	ONDR	44 NS	0804		381 D	5			
	9240	ARCE	22 GRF	0912.6	0919.6	66				
	127	TORN	45 C	0958.3	0958.8	2.7	85	30		
	2800	OTTA	21 GRF	1300	1306	20 D	1.2			
	2800	OTTA	1 S	1301	1302.6	3	1.4	0.7		
	2800	OTTA	21 GRF	1340	1346	20	2.2	1		
	2800	OTTA	1 S	1343.7	1344	1.5	2.2	1.7		
	18	MCMA	42 SER	1414	1416	3			1	
	200	HIRA	44 NS	2105 E	0535	640 D	33	12		
	207	VORO	44 NS	2200	0000	240	17			
26	100	GORK	44 NS	0500 E		480		5		
	200	GORK	43 NS	0500 E		480		5		
	127	TORN	44 NS	0650 E	1358.2	470 D	14			
	260	ONDR	44 NS	0742		413 D	9			
	240	DWIN	44 NS	0851 E		112 D		2		
	169	DWIN	44 NS	0851 E		112 D		8		
	160	DWIN	44 NS	0851 E		112 D		5		
	3100	CRIM	26 FAL	0740	1000		3			

SOLAR RADIO EMISSION
OUTSTANDING OCCURRENCES
OCTOBER 1976

OCT 1976	FREQUENCY	STATION	TYPE		STARTING TIME UT	TIME OF MAXIMUM UT	DURATION MINUTES	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1} PEAK	FLUX DENSITY MEAN	INT	POLARIZATION OR REMARKS
	9240	ARCE	40	F	1010.6	1011.8	5				
	234	POTS	40	F	1157	1157	1.5	350	10		
	9240	ARCE	1	S	1219.8	1220.1	0.6				
	2800	OTTA	23	GRF	1240	1310	210	2	1		
	260	ONDR	8	S	1256.3	1256.3	0.3	226			
	237	TRST	41	F	1256.9	1257.2	0.5	1600	3 R		
	260	ONDR	8	S	1257.4	1257.4	0.3	94			
	237	TRST	41	F	1258.3	1258.5	0.4	440	6 R		
	9240	ARCE	40	F	1352.8	1402.8	18				
	18	MCMA	42	SER	1405	1406	2			1	
	2800	OTTA	8	S	1411.7	1411.8	0.6	1	0.5		
	2800	OTTA	22	GRF	1620	1757	190	2	1		
	207	VORO	44	NS	2200	2317	240	11			
27	260	ONDR	43	NS	0840		190	6			
	160	OWIN	44	NS	0943 E		295 D		3		
	169	OWIN	44	NS	0943 E		295 D		3		
	9240	ARCE	22	GRF	1451.1	1455.2	7.3				
	2800	OTTA	20	GRF	1925	2000	120	1.6	0.8		
28	207	VORO	7	C	0133	0133	1	196			
	100	HIRA	45	C	0140.6	0140.8	1	500	130		
	207	VORO	46	C	0140	0141	2	245			
	1400	SYDN	20	GRF	0509.7	0517.3	15.9				
	1000	TYKW	45	C	0509	0517.7	16	28	6		
	1000	TYKW	29	PBI	0525		95	1.3	0.6		
	2000	TYKW	5	S	0509	0517.7	18	13	7		
	2000	TYKW	29	PBI	0527		95	4	2		
	3750	TYKW	5	S	0512	0517.5	15	9	5		
	3750	TYKW	29	PBI	0527		80	5	2		
	700	SYDN	45	C	0513.3	0517.8	12.3				
	686	MANI	40		0514.3	0518.8	8.2	29.5	12.6		
	1415	MANI	1		0515.8	0518.2	6	7	3.5		
	2695	MANI	1		0516.2	0519.2	5.6	5.8	2.3		
	160	OWIN	44	NS	0743 E		414 D		1		
	169	OWIN	44	NS	0743 E		414 D		2		
	160	OWIN	45	C	0750	0751	2	100	10		
	240	OWIN	45	C	0750	0751	2	8	3		
	169	OWIN	45	C	0750	0751	2	100	10		
	169	OWIN	45	C	0755	0755.5	1	50	5		
	160	OWIN	45	C	0755	0755.5	1	60	5		
	240	OWIN	45	C	0755	0755.5	1	30	5		
	160	OWIN	45	C	0810	0811	3	70	5		
	169	OWIN	45	C	0810	0811	3	70	10		
	160	OWIN	45	C	0824	0825	2	100	5		
	240	OWIN	45	C	0824	0825	2	40	5		
	169	OWIN	45	C	0824	0825	2	100	5		
	260	ONDR	8	S	0825	0825	0.3	21			
	33	UPIC	4	S/F	0916.3	0916.7	1.1				
	29	UPIC	4	S/F	0916.5	0917.1	1.1				
	169	OWIN	45	C	0916	0916.5	1	220	10		
	160	OWIN	45	C	0916	0916.5	1	200	15		
	260	ONDR	42	SER	0937	0948.3	13	29	1		
	237	TRST	42	SER	0941	0949	9	50	46 R		
	240	OWIN	45	C	0943	0944	2	35	5		
	169	OWIN	45	C	0943	0944	2	250	30		
	160	OWIN	45	C	0943	0944	2	300 D	25		
	29	UPIC	4	S/F	0944.4	0944.9	1.2				
	33	UPIC	4	S/F	0944.7	0945	0.8				
	160	OWIN	45	C	0948	0949	2	280	50		
	240	OWIN	45	C	0948	0949	2	60	10		
	169	OWIN	45	C	0948	0949	2	300	50		
	169	OWIN	45	C	0955	0957	6	150	10		
	160	OWIN	45	C	0955	0957	6	200	10		
	169	OWIN	45	C	1106	1106.5	1	250	5		
	160	OWIN	45	C	1106	1106.5	1	150	5		
	169	OWIN	45	C	1137.5	1138	1	70	5		
	160	OWIN	45	C	1137.5	1138	1	150	5		
	2800	OTTA	26A	FAL	1410	1510	60	-1	-0.5		
	2800	OTTA	1	S	1454.5	1455	1.5	1.4	0.7		
	18	MCMA	42	SER	1621	1628	8			1	
	18	MCMA	6	S	1639	1642	5			2	
	2800	OTTA	1	S	1915	1916	10	0.8	0.4		
	200	HIRA	45	C	2135.5	2136.2	1	620	50		
	100	HIRA	45	C	2135.8	2136.2	1	1130	180		
	207	VORO	42	SER	2329	2330	13	38			
	207	VORO			2329	2337		233			
	200	HIRA	45	C	2336	2337	2	570	80		
	100	HIRA	45	C	2336.8	2337	0.6	1150	190		
29	207	VORO	42	SER	0135	0136	25	31			
	207	VORO			0135	0141		34			
	207	VORO			0135	0148		61			
	207	VORO			0135	0150		171			
	207	VORO			0135	0158		36			

SOLAR RADIO EMISSION
OUTSTANDING OCCURRENCES

OCTOBER 1976

OCT 1976	FREQUENCY	STATION	TYPE	STARTING TIME UT	TIME OF MAXIMUM UT	DURATION MINUTES	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1} PEAK	FLUX DENSITY MEAN	INT	POLARIZATION OR REMARKS
	100	HIRA	45 C	0140.8	0141	1	1080	110		
	700	SYDN	45 C	0148	0148.4	0.6				
	700	SYDN	2 S	0150	0150.4	1				
	100	HIRA	45 C	0240	0240.8	1.5	1180	280		
	200	HIRA	45 C	0240	0240.5	1	660	100		
	200	HIRA	45 C	0308	0308.7	1	85	20		
	100	HIRA	45 C	0347.8	0348	1.5	610	120		
	700	SYDN	45 C	0411.2	0411.7	2.1				
	700	SYDN	45 C	0414.3	0415.6	2.3				
	240	DWIN	45 C	0810	0810	3	40	5		
	169	DWIN	45 C	0810	0812	3	100	5		
	160	DWIN	45 C	0810	0812	3	60	5		
	260	ONDR	42 SER	0811	0820.5	10	10			
	160	DWIN	45 C	0924	0924.5	1	190	5		
	240	DWIN	45 C	0924	0924.5	1	15	2		
	169	DWIN	45 C	0924	0924.5	1	200	5		
	33	UPIC	2 S/F	1025.2	1025.5	0.5				
	29	UPIC	2 S/F	1025.5	1025.7	0.4				
	33	UPIC	2 S/F	1028.1	1028.4	0.7				
	29	UPIC	8 S	1028.3	1028.6	0.5				
	260	ONDR	42 SER	1034	1140.5	139	37			
	29	UPIC	2 S/F	1156.1	1156.3	0.6				
	33	UPIC	2 S/F	1156.2	1156.4	0.4				
	29	UPIC	2 S/F	1211.2	1211.4	0.7				
	33	UPIC	2 S/F	1211	1211.1	0.6				
	2800	OTTA	1 S	1740	1743	10	0.6	0.3		
	2800	OTTA	240AR	1912	2000	48	2	1		
	2800	OTTA	1 S	1915.2	1916	3	1.6	0.8		
	2800	OTTA	24P R	2000		180 D	2			
	1420	BOUL	8 S	2203.5	2204.5	2.5	10	3		
	200	HIRA	45 C	2203.8	2204.2	1.5	250	90		
	500	HIRA	45 C	2203.8	2205.2	1.7	115	25		
	100	HIRA	45 C	2203.9	2204.2	2.3	1180	500		
	606	MANI	8	2204.6	2205.3	1.9	121	39.1		
	2695	PENT	2 S/F	2204	2204.8	1	1.8	1		
	2695	BOUL	8 S	2205	2206	2	4	1		
	207	VORO	44 NS	2300	0146	160	11			
30	3750	TYKW	5 S	0319	0323	10	1.5	0.5U		
	2000	TYKW	5 S	0321	0323.2	3	2.3	0.8		
	2000	TYKW	29 PBI	0324		7	0.6	0.3		
	1000	TYKW	45 C	0322	0323.3	3	7	1.5		
	9400	TYKW	45 C	0528.5	0529.3	2	31	9		
	29	UPIC	45 C	0711.7	0714.6	3.6				
	33	UPIC	45 C	0711.8	0712.4	3.5				
	29	UPIC	2 S/F	1110.3	1110.6	0.8				
	33	UPIC	8 S	1110.7	1110.8	0.4				
	33	UPIC	2 S/F	1125.2	1125.6	0.8				
	29	UPIC	2 S/F	1125.5	1125.6	0.6				
	33	UPIC	45 C	1155.5	1156.5	2.4				
	29	UPIC	45 C	1155.6	1156.7	2.3				
	29	UPIC	45 C	1236.1	1240.1	5.8				
	33	UPIC	45 C	1236.2	1240	6.2				
	29	UPIC	2 S/F	1255.2	1255.6	0.5				
	33	UPIC	2 S/F	1255.2	1255.6	0.6				
	18	MCMA	6 S	1545	1548	4			1	
	18	MCMA	6 S	1654	1655	2			1	
	18	MCMA	6 S	1700	1703	4			1	

Reports received from the following observatories:

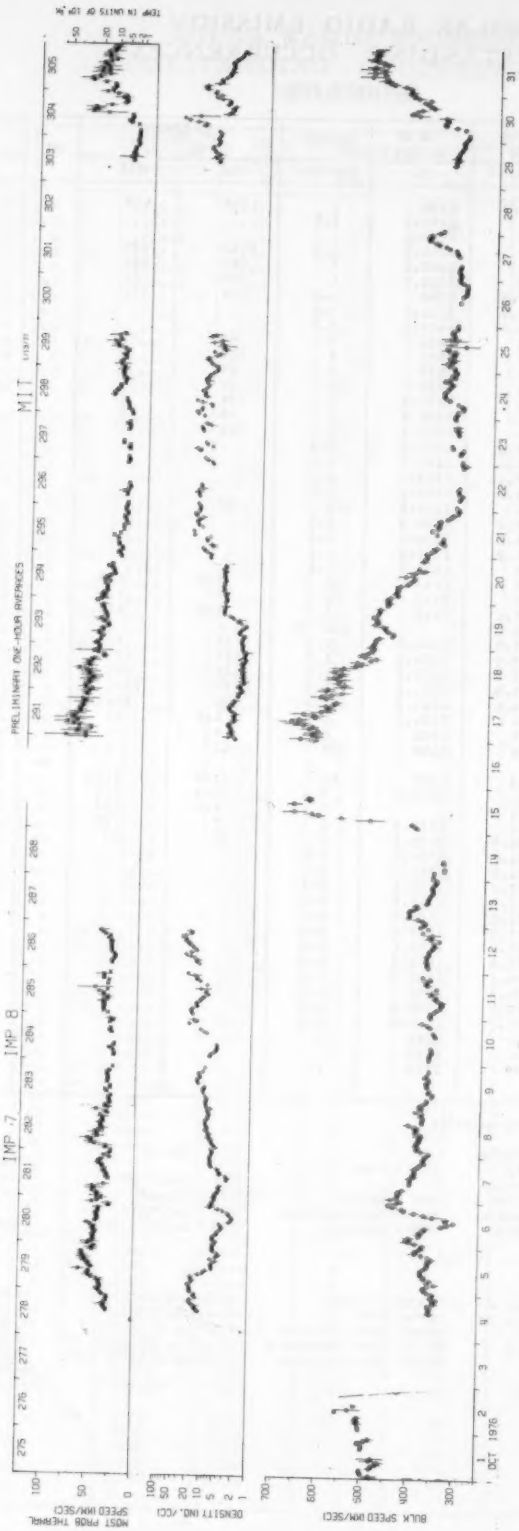
ARCE = Arcetri
BERL = Berlin-Adlershof
BORD = Bordeaux
BOUL = Boulder
CRIM = Simferopol
DWIN = Dwingeloo
GORK = Gorky
HARS = Harestua
HIRA = Hiraiso
HUAN = Huancayo
IRKU = Irkutsk
KIEV = Kiev
MANI = Manila
MCMA = McMath-Hulbert
ONDR = Ondrejov
OTTA = Ottawa
PENT = Penticton
POTS = Potsdam
SAOP = Sao Paulo
SGMR = Sagamore Hill
SYDN = Sydney
TORN = Torun
TYKW = Toyokawa
TRST = Trieste
VORO = Voroshilov (Ussurisk)

Explanation of Type Code:

1 Simple 1
2 Simple 1F
3 Simple 2
4 Simple 2F
5 Simple
6 Minor
7 Minor +
8 Spike
20 Simple 3
21 Simple 3A
22 Simple 3F
23 Simple 3AF
24 Rise
25 Rise A
26 Fall
27 Rise and Fall
28 Precursor
29 Post Burst Increase
30 Post Burst Increase A
31 Post Burst Decrease
32 Absorption
40 Fluctuation
41 Group of Bursts
42 Series of Bursts
43 Onset of Noise Storm
44 Noise Storm in Progress
45 Complex
46 Complex F
47 Great Burst
48 Major
49 Major +

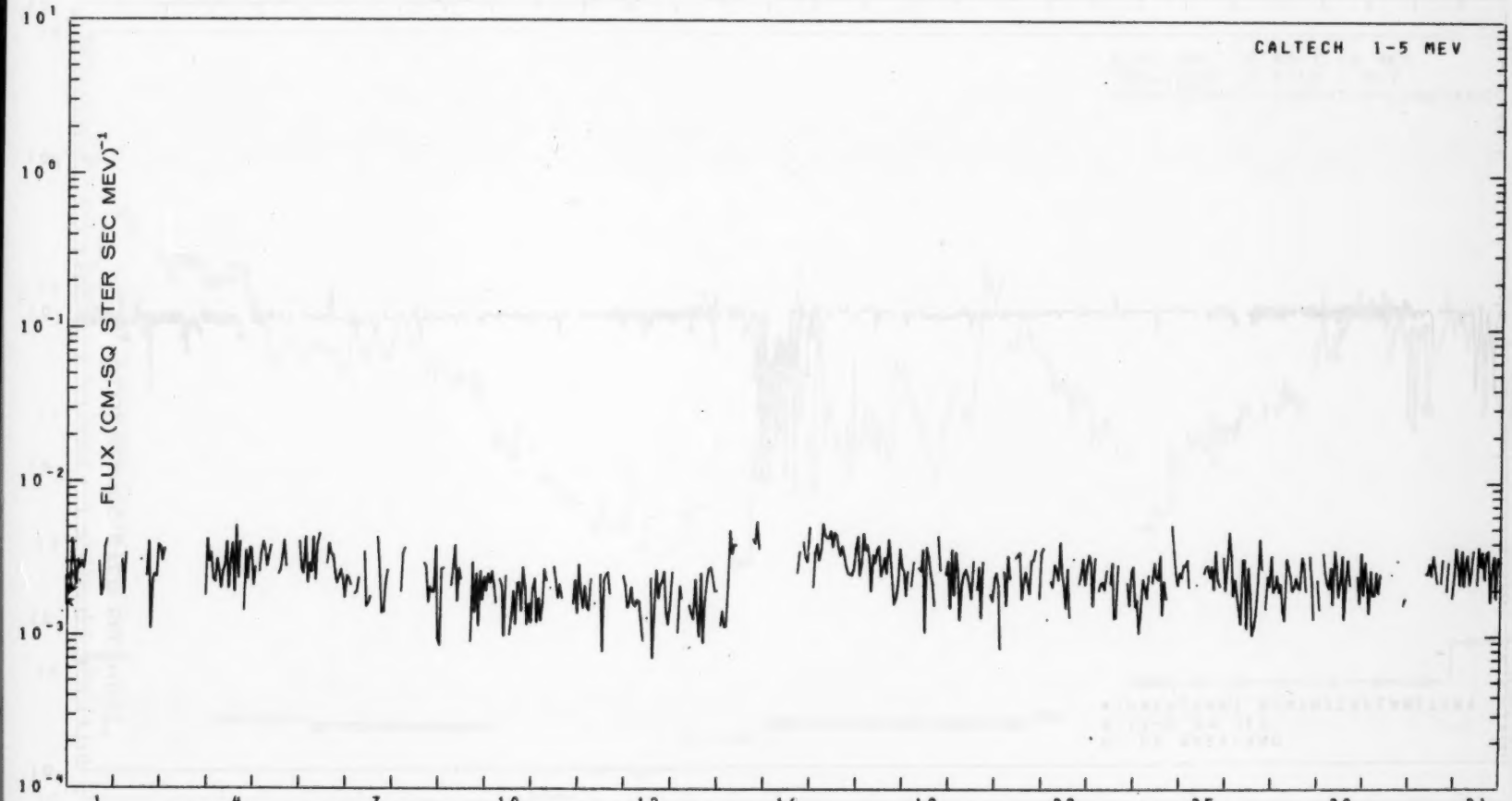
18
Oct 76

IMP 7 AND 8 SOLAR WIND PLASMA
OCTOBER 1976



IMP 7 AND 8 ELECTRONS

OCTOBER, 1976

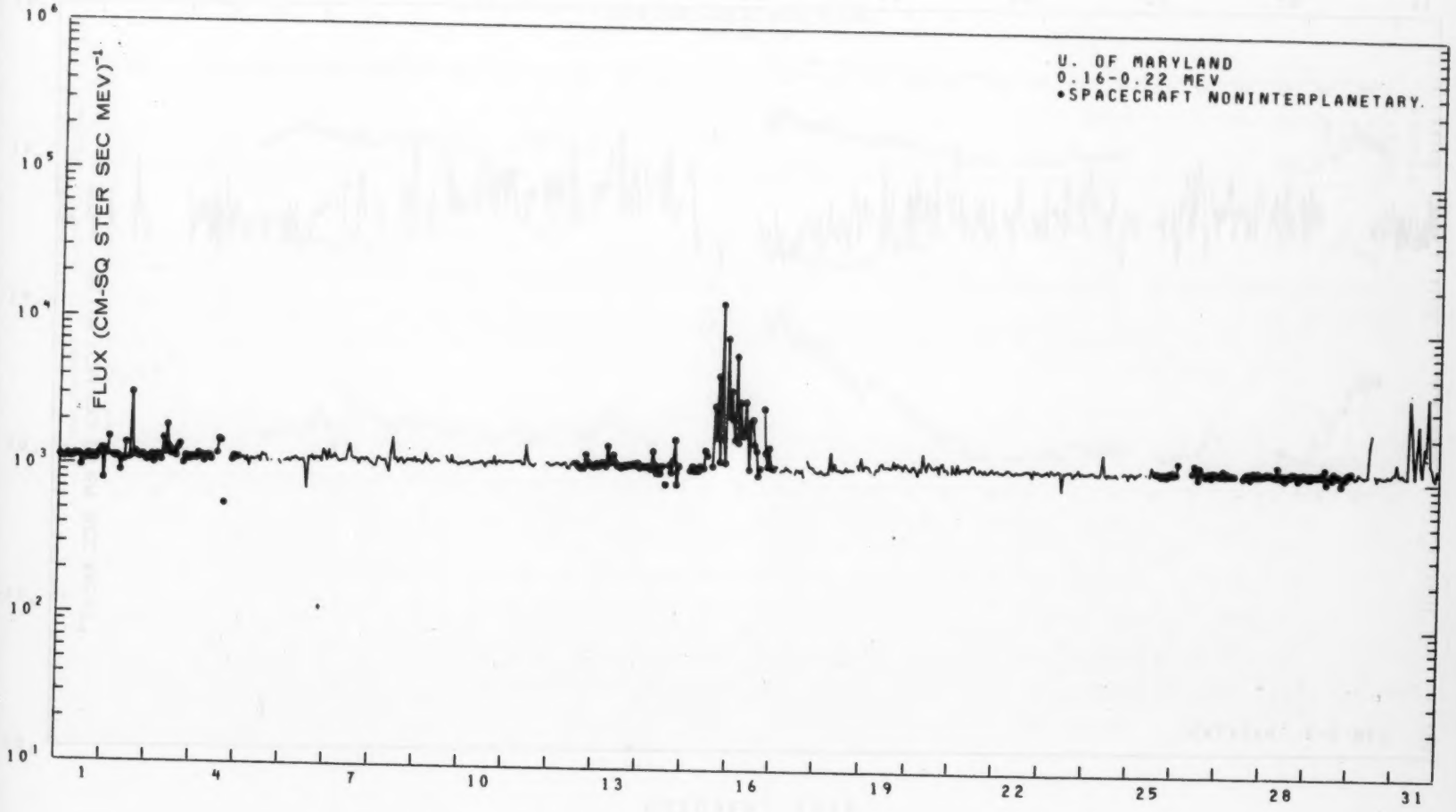


19 Oct 76

IMP 7 AND 8 LOW ENERGY PROTONS

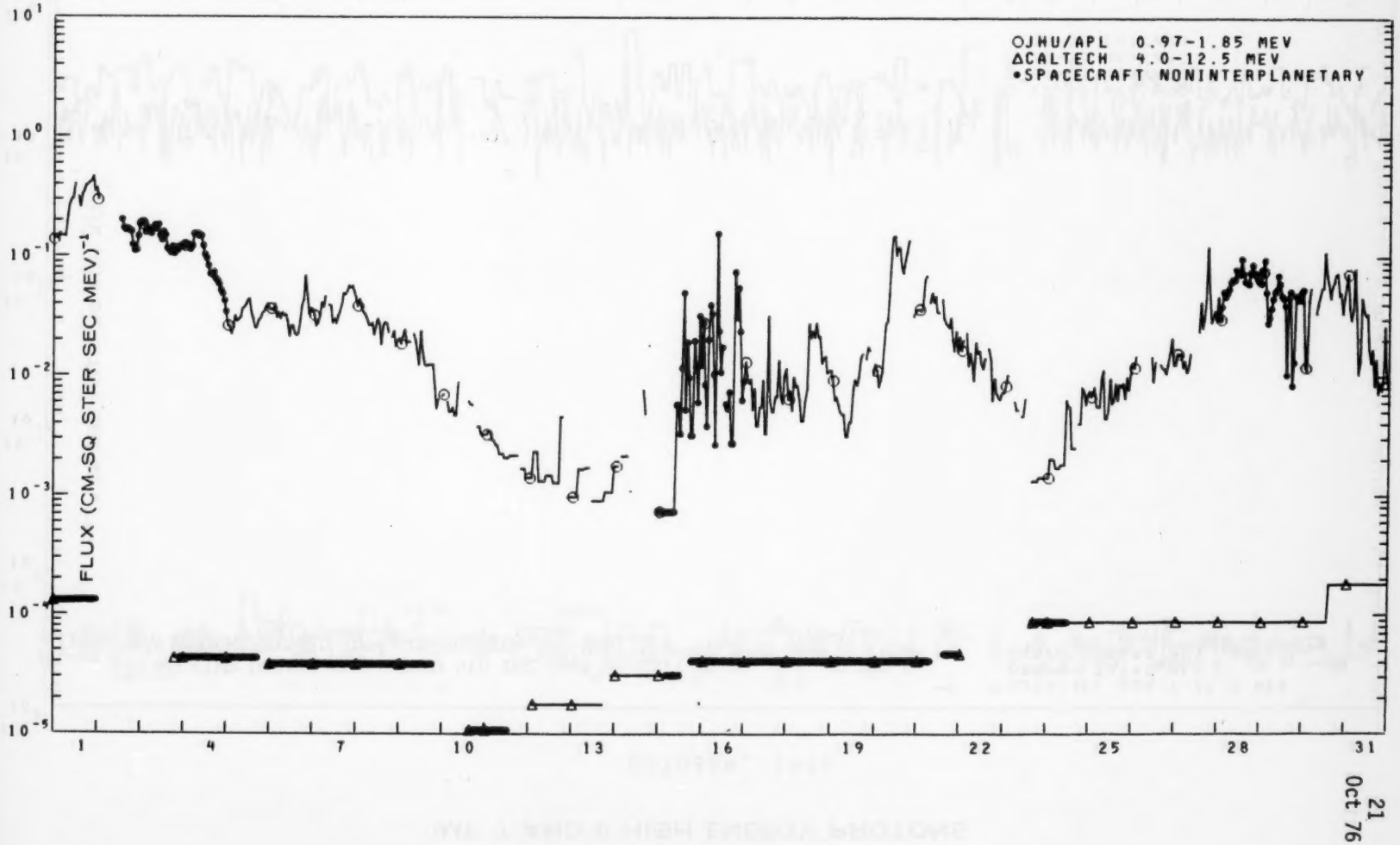
OCTOBER, 1976

20 Oct 76



IMP 7 AND 8 INTERMEDIATE ENERGY PROTONS

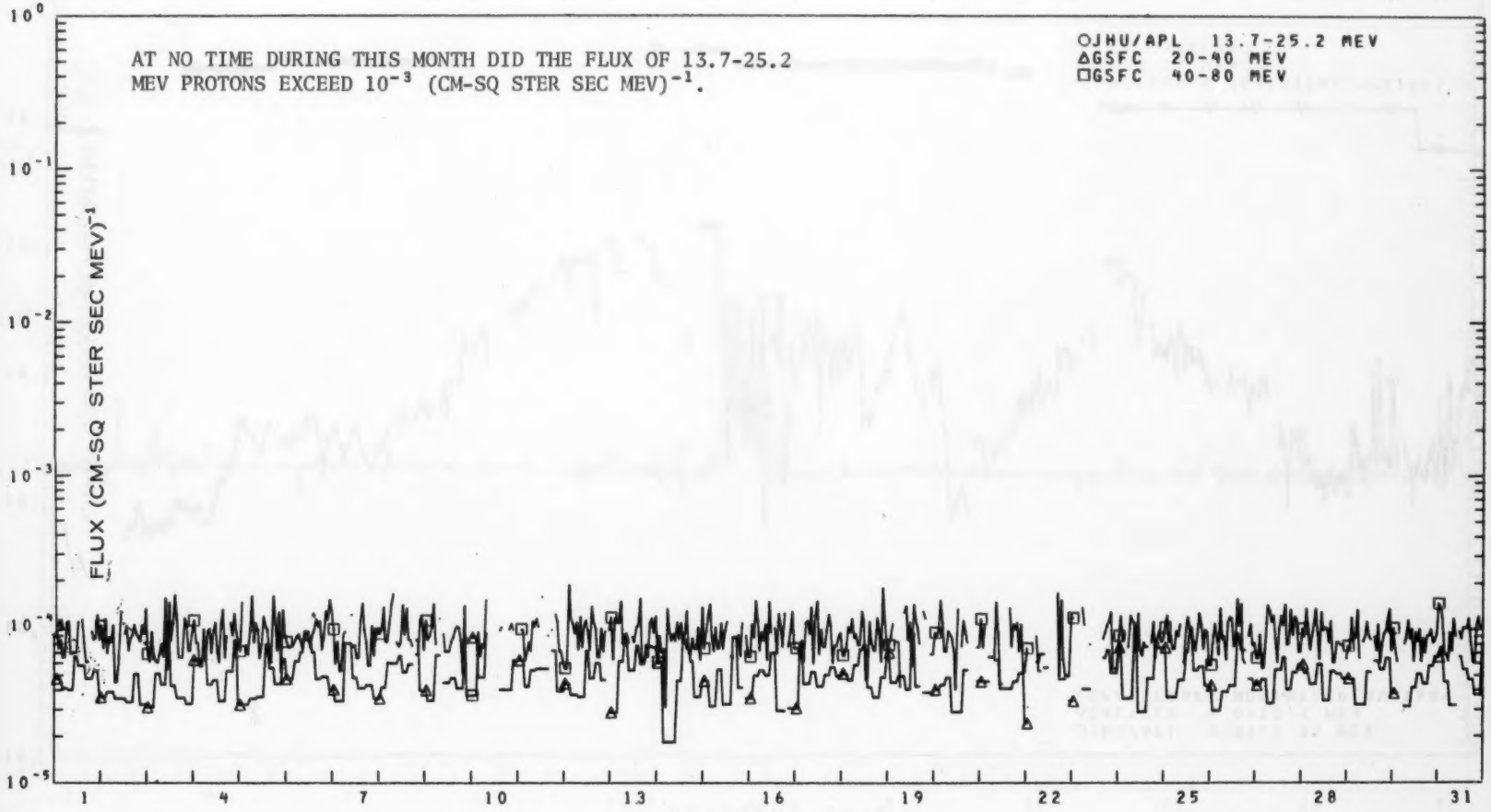
OCTOBER, 1976



IMP 7 AND 8 HIGH ENERGY PROTONS

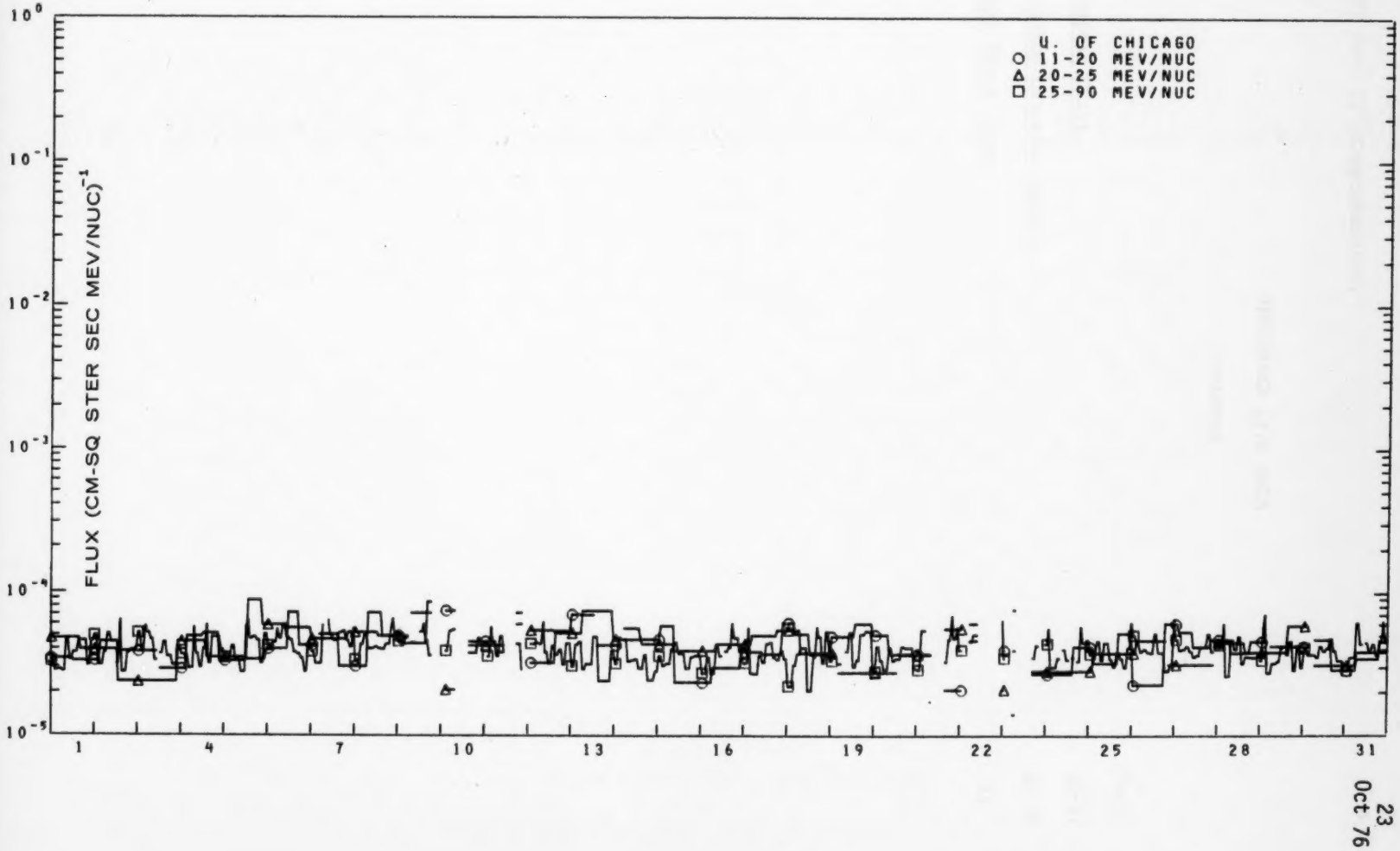
OCTOBER, 1976

22
Oct 76



IMP 7 AND 8 ALPHA PARTICLES

OCTOBER, 1976



SEPTEMBER 1976 DATA

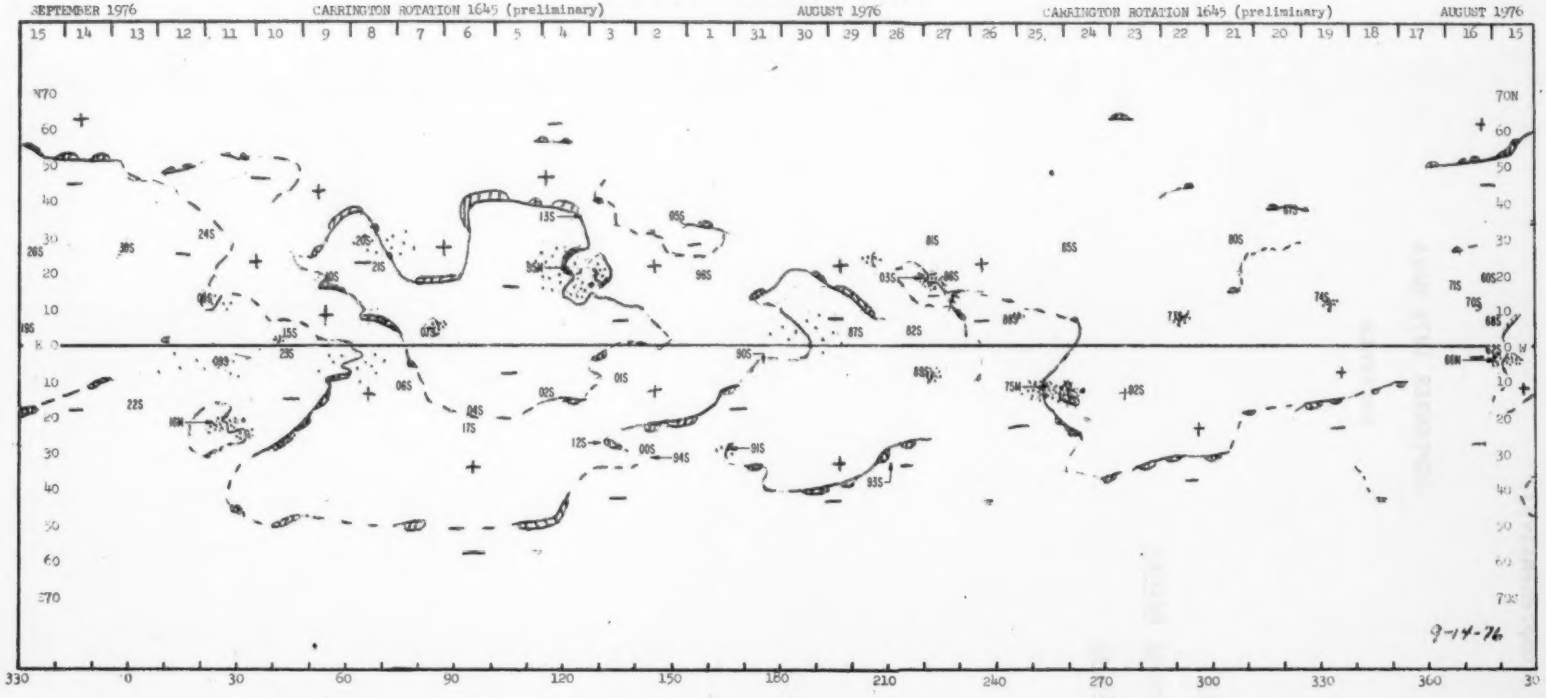
Contents

	Page
Hα Synoptic Chart	26-27
Abbreviated Calendar Record	28-35
Regional Flare Index	35

ABBREVIATED CALENDAR RECORD

Hα SYNOPTIC CHART

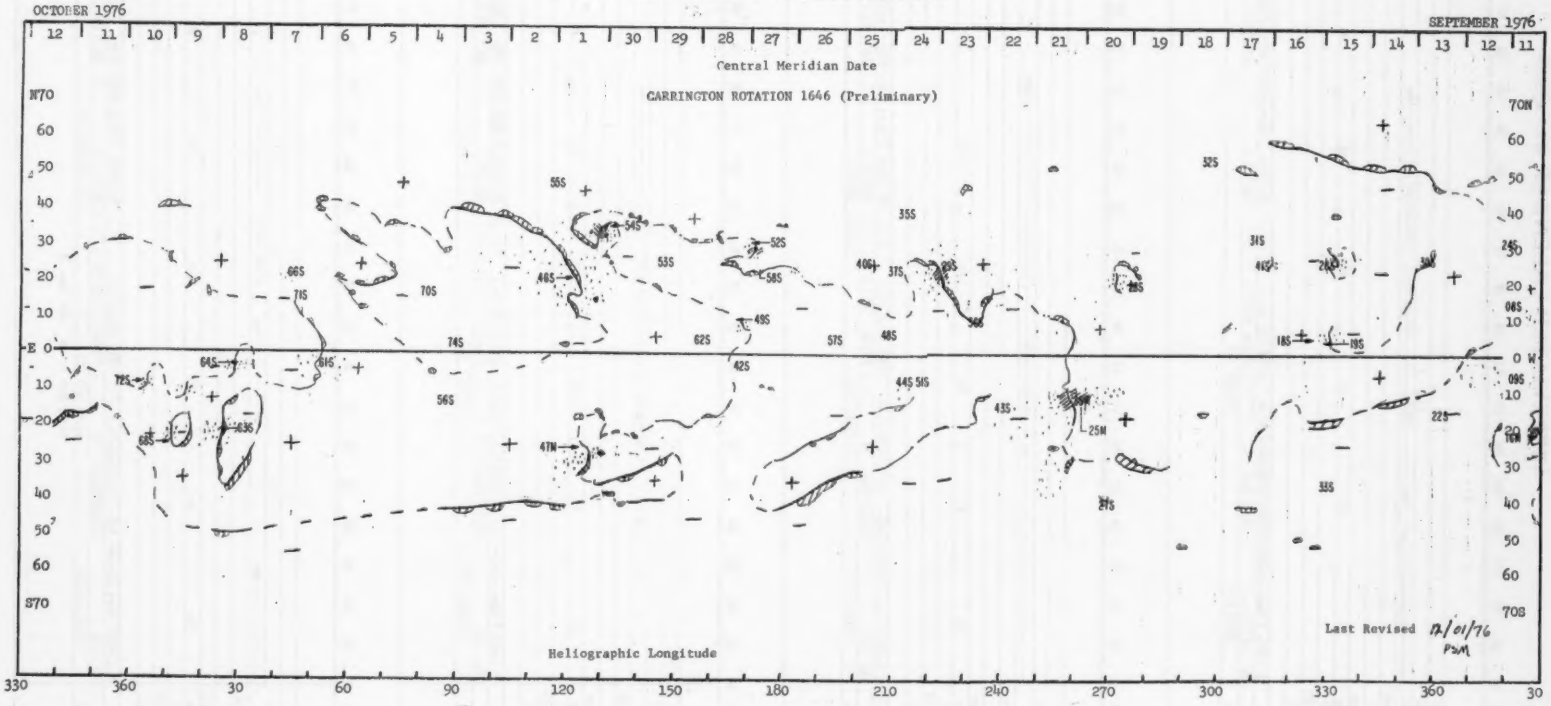
AUGUST 1976 - SEPTEMBER 1976



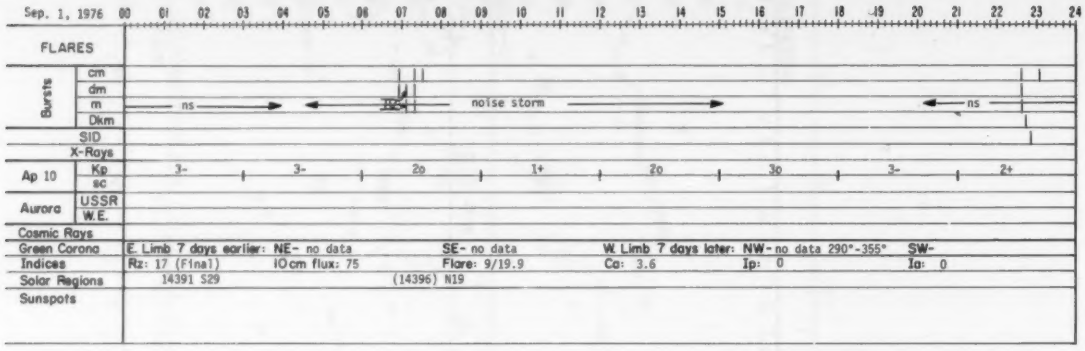
ABBREVIATED CALENDAR RECORD

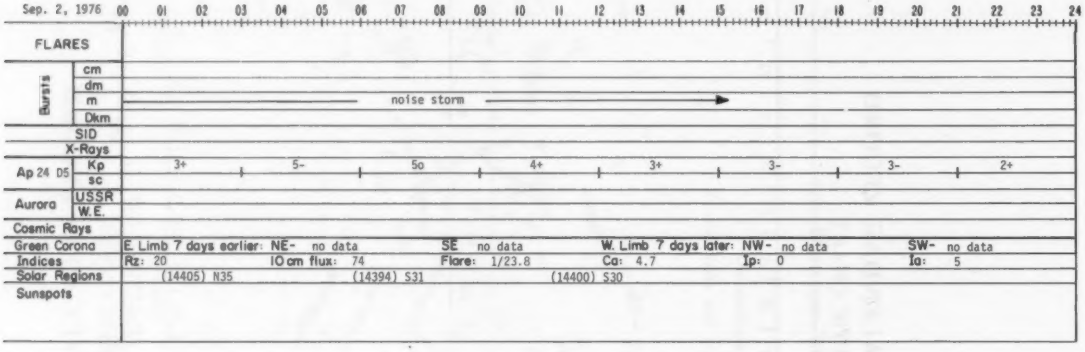
Hα SYNOPTIC CHART

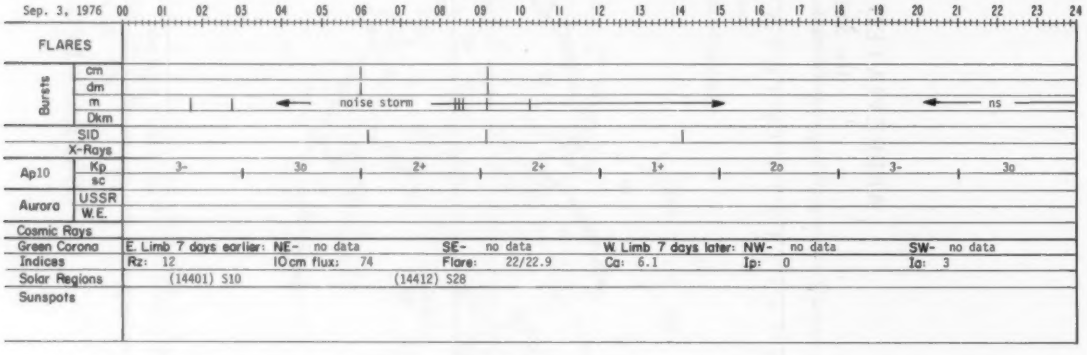
SEPTEMBER 1976 - OCTOBER 1976

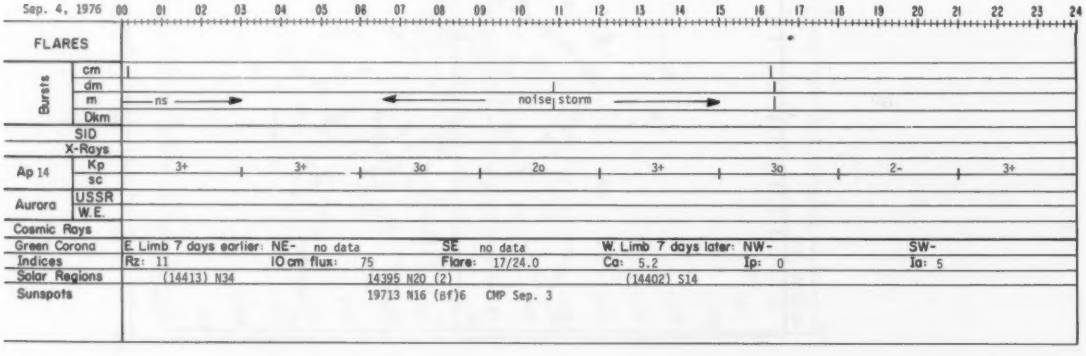


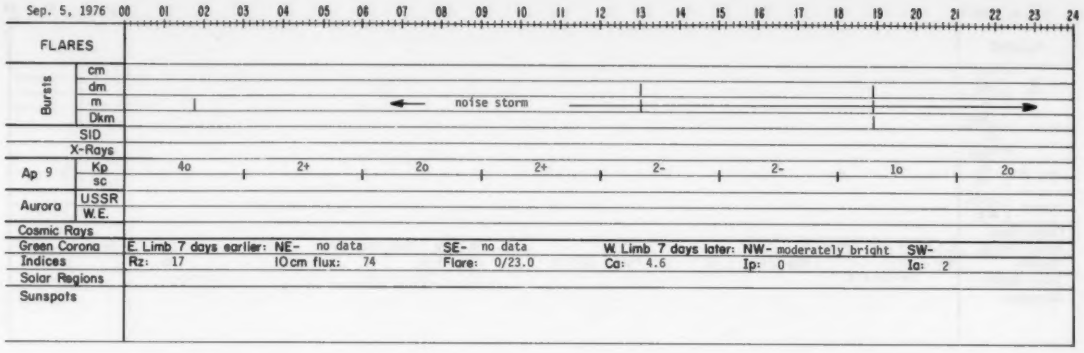
ABBREVIATED CALENDAR RECORD

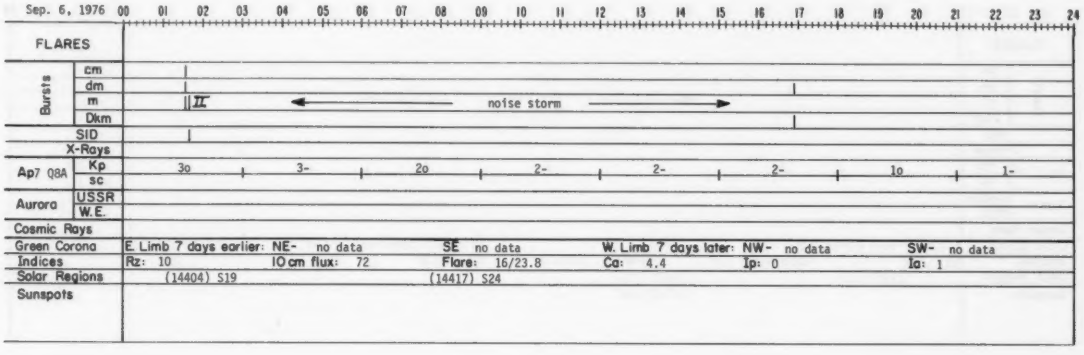


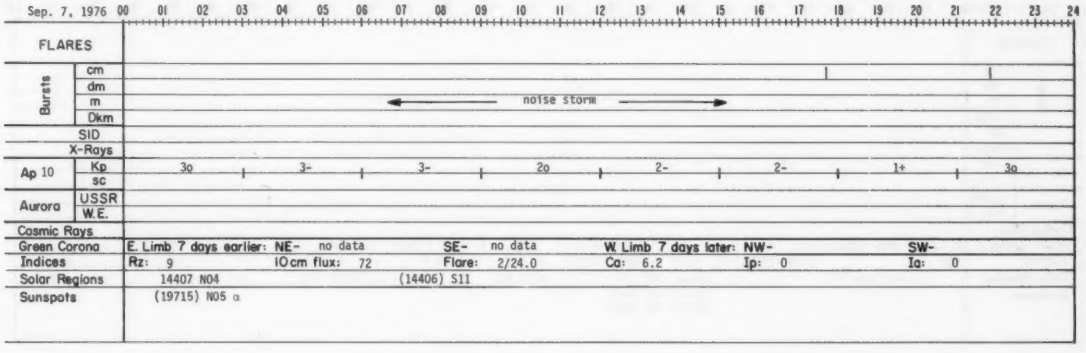

Sep. 2, 1976
00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
FLARES
Bursts
cm
dm
m
Dkm
noise storm
SID
X-Rays
Ap 24 D5
Kp
sc
3+ 5- 5o 4+ 3+ 3- 3- 2+
Aurora
USSR
W.E.
Cosmic Rays
Green Corona
E. Limb 7 days earlier: NE- no data SE no data W. Limb 7 days later: NW- no data SW- no data
Indices
Rz: 20 10cm flux: 74 Flare: 1/23.8 Ca: 4.7 Ip: 0 Ia: 5
Solar Regions
(14405) N35 (14394) S31 (14400) S30
Sunspots

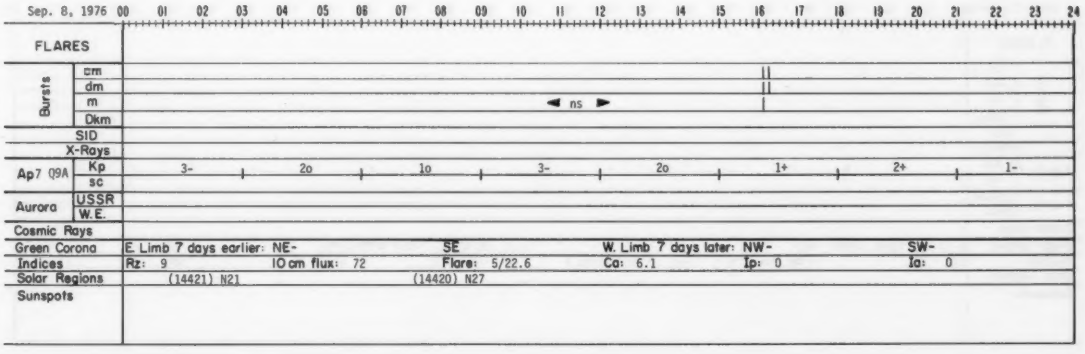


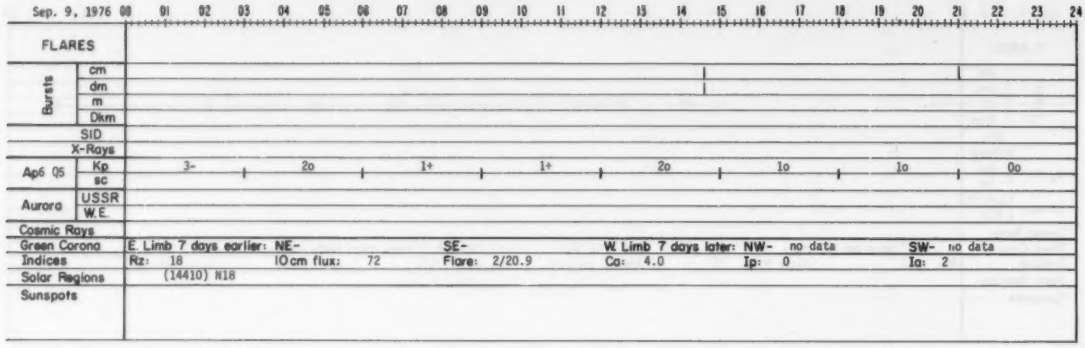


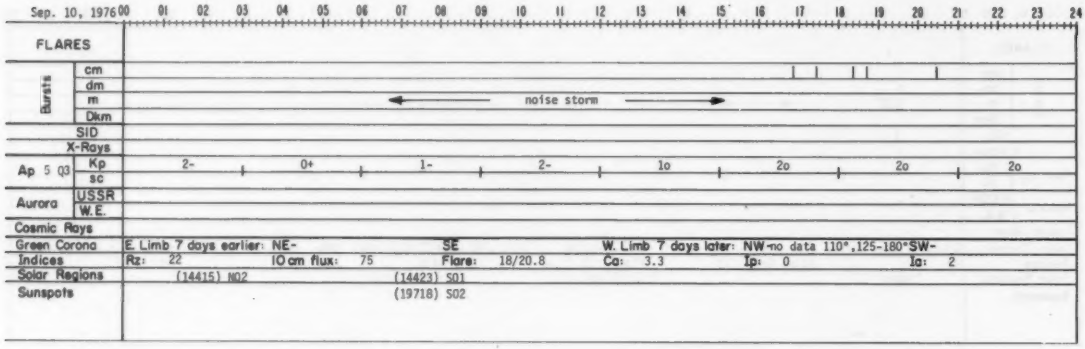

Sep. 5, 1976
00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
FLARES
Bursts
cm
dm
m
Dkm
noise storm
SID
X-Rays
Ap 9
Kp
sc
4o 2+ 2o 2+ 2- 2- 1o 2o
Aurora
USSR
W.E.
Cosmic Rays
Green Corona
E. Limb 7 days earlier: NE- no data SE- no data
W. Limb 7 days later: NW- moderately bright SW-
Indices
Rz: 17 10cm flux: 74 Flare: 0/23.0 Ca: 4.6 Ip: 0 Ia: 2
Solar Regions
Sunspots

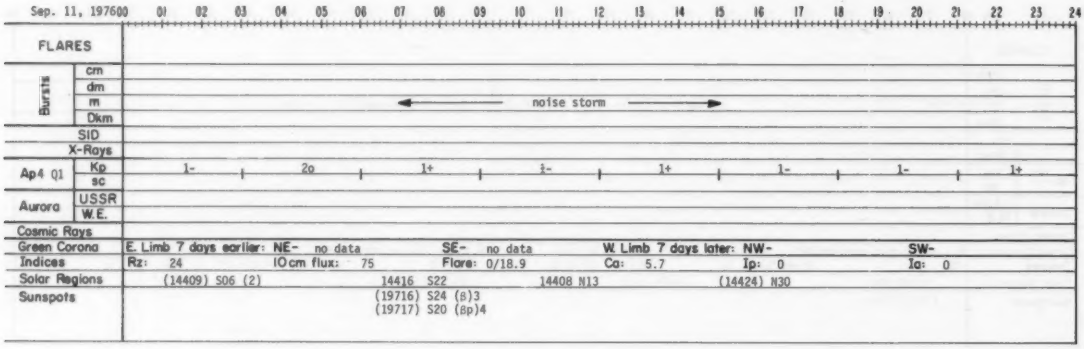

Sep. 6, 1976
00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
FLARES
Bursts
cm
dm
m
Dkm
II
noise storm
SID
X-Rays
Ap7 Q8A
Kp
sc
3o 3- 2o 2- 2- 2- 1o 1-
Aurora
USSR
W.E.
Cosmic Rays
Green Corona
E. Limb 7 days earlier: NE- no data SE no data
W. Limb 7 days later: NW- no data SW- no data
Indices
Rz: 10 10cm flux: 72 Flare: 16/23.8 Ca: 4.4 Ip: 0 Ia: 1
Solar Regions
(14404) S19 (14417) S24
Sunspots

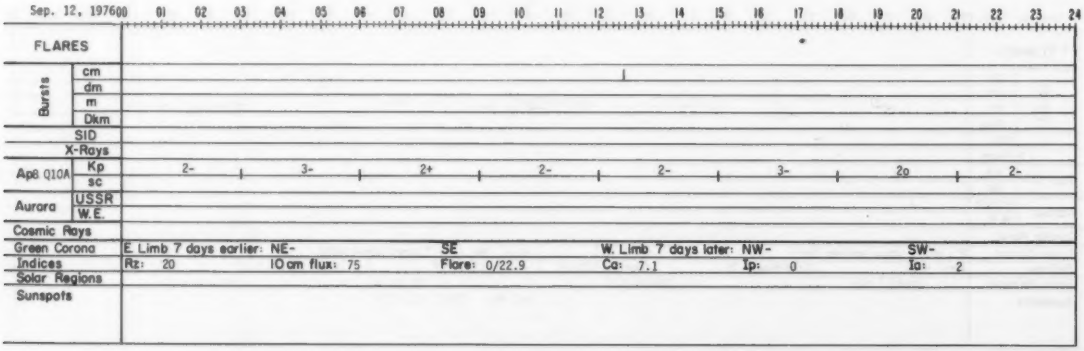

Sep. 7, 1976
00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
FLARES
Bursts
cm
dm
m
Dkm
noise storm
SID
X-Rays
Ap 10
Kp
sc
3o 3- 3- 2o 2- 2- 1+ 3o
Aurora
USSR
W.E.
Cosmic Rays
Green Corona
E. Limb 7 days earlier: NE- no data SE- no data
W. Limb 7 days later: NW- SW-
Indices
Rz: 9 10cm flux: 72 Flare: 2/24.0 Ca: 6.2 Ip: 0 Ia: 0
Solar Regions
14407 N04 (14406) S11
Sunspots
(19715) N05 α


Sep. 8, 1976
00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
FLARES
Bursts
cm
dm
m
Dkm
ns
SID
X-Rays
Ap7 Q9A
Kp
sc
3- 2o 1o 3- 2o 1+ 2+ 1-
Aurora
USSR
W.E.
Cosmic Rays
Green Corona
E. Limb 7 days earlier: NE- SE W. Limb 7 days later: NW- SW-
Indices
Rz: 9 10cm flux: 72 Flare: 5/22.6 Ca: 6.1 Ip: 0 Ia: 0
Solar Regions
(14421) N21 (14420) N27
Sunspots


Sep. 9, 1976
00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
FLARES
Bursts
cm
dm
m
Dkm
SID
X-Rays
Ap6 Q5
Kp
3- 2o 1+ 1+ 2o 1o 1o 0o
sc
Aurora
USSR
W.E.
Cosmic Rays
Green Corona
E. Limb 7 days earlier: NE- SE- W. Limb 7 days later: NW- no data SW- no data
Indices
Rz: 18 10cm flux: 72 Flare: 2/20.9 Ca: 4.0 Ip: 0 Ia: 2
Solar Regions
(14410) N18
Sunspots


Sep. 10, 1976
00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
FLARES
Bursts
cm
dm
m
noise storm
Dkm
SID
X-Rays
Ap 5 Q3
Kp
2- 0+ 1- 2- 1o 2o 2o 2o
sc
Aurora
USSR
W.E.
Cosmic Rays
Green Corona
E. Limb 7 days earlier: NE- SE W. Limb 7 days later: NW-no data 110°,125-180°SW-
Indices
Rz: 22 10cm flux: 75 Flare: 18/20.8 Ca: 3.3 Ip: 0 Ia: 2
Solar Regions
(14415) N02 (14423) S01
Sunspots
(19718) S02


Sep. 11, 1976
00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
FLARES
Bursts
cm
dm
m
noise storm
Dkm
SID
X-Rays
Ap4 Q1
Kp
1- 2o 1+ 1- 1+ 1- 1- 1+
sc
Aurora
USSR
W.E.
Cosmic Rays
Green Corona
E. Limb 7 days earlier: NE- no data SE- no data W. Limb 7 days later: NW- SW-
Indices
Rz: 24 10cm flux: 75 Flare: 0/18.9 Ca: 5.7 Ip: 0 Ia: 0
Solar Regions
(14409) S06 (2) 14416 S22 14408 N13 (14424) N30
Sunspots
(19716) S24 (B)3
(19717) S20 (Bp)4


Sep. 12, 1976
00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
FLARES
Bursts
cm
dm
m
Dkm
SID
X-Rays
Ap8 Q10A
Kp
2- 3- 2+ 2- 2- 3- 2o 2-
sc
Aurora
USSR
W.E.
Cosmic Rays
Green Corona
E. Limb 7 days earlier: NE- SE W. Limb 7 days later: NW- SW-
Indices
Rz: 20 10cm flux: 75 Flare: 0/22.9 Ca: 7.1 Ip: 0 Ia: 2
Solar Regions
Sunspots

Sep. 13, 1976 00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

FLARES

Bursts: cm, dm, m, Dkm

SID

X-Rays

Ap 5 Q2 — Kp: 2o | 2- | 1+ | 1o | 0+ | 1- | 1+ | 2o

sc

Aurora: USSR, W.E.

Cosmic Rays

Green Corona — E. Limb 7 days earlier: NE- no data; SE- no data; W. Limb 7 days later: NW- no data; SW- no data

Indices — Rz: 18; 10cm flux: 73; Flare: 0/24.0; Ca: 7.8; Ip: 0; Ia: 0

Solar Regions — 14422 S17; (14430) N26

Sunspots

Sep. 14, 1976 00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

FLARES

Bursts: cm, dm, m, Dkm

SID

X-Rays

Ap 10 — Kp: 2o | 2+ | 2- | 3o | 3o | 3- | 2- | 2+

sc

Aurora: USSR, W.E.

Cosmic Rays

Green Corona — E. Limb 7 days earlier: NE- no data; SE- no data; W. Limb 7 days later: NW- no data; SW- no data

Indices — Rz: 10; 10cm flux: 74; Flare: 2/22.3; Ca: 5.7; Ip: 0; Ia: 0

Solar Regions

Sunspots

Sep. 15, 1976 00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

FLARES

Bursts: cm, dm, m, Dkm

SID

X-Rays

Ap 10 — Kp: 1- | 4- | 3+ | 3- | 2+ | 0+ | 1+ | 2o

sc

Aurora: USSR, W.E.

Cosmic Rays

Green Corona — E. Limb 7 days earlier: NE-; SE-; W. Limb 7 days later: NW- no data; SW- no data

Indices — Rz: 16; 10cm flux: 73; Flare: 0/22.5; Ca: no data; Ip: 0; Ia: 3

Solar Regions — (14426) N25; (14419) N04; (14433) S36

Sunspots

Sep. 16, 1976 00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

FLARES

Bursts: cm, dm, m, Dkm

SID

X-Rays

Ap 6 Q6 — Kp: 2+ | 2+ | 1o | 1+ | 2o | 2o | 2- | 1o

sc

Aurora: USSR, W.E.

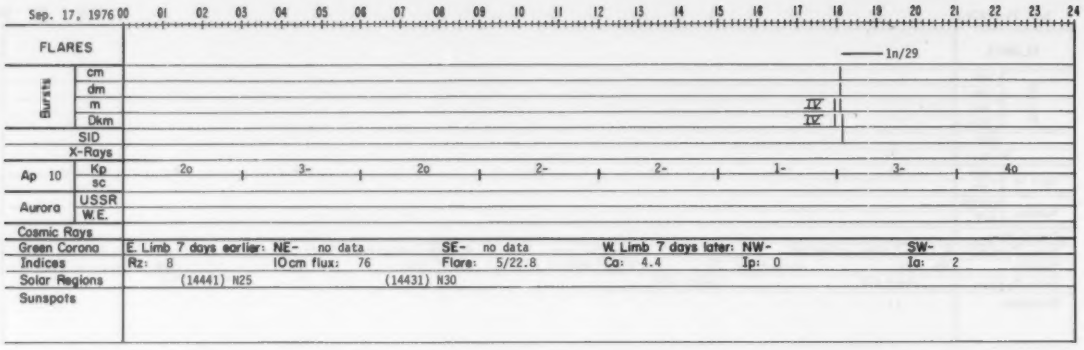
Cosmic Rays

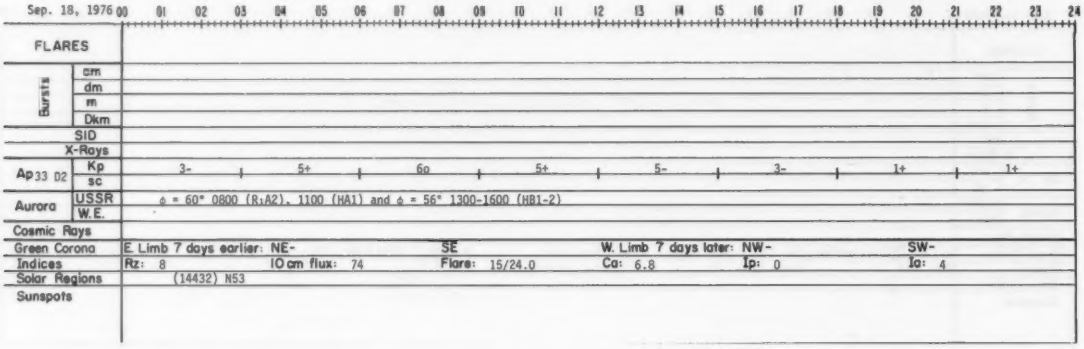
Green Corona — E. Limb 7 days earlier: NE- no data; SE- no data; W. Limb 7 days later: NW-; SW-

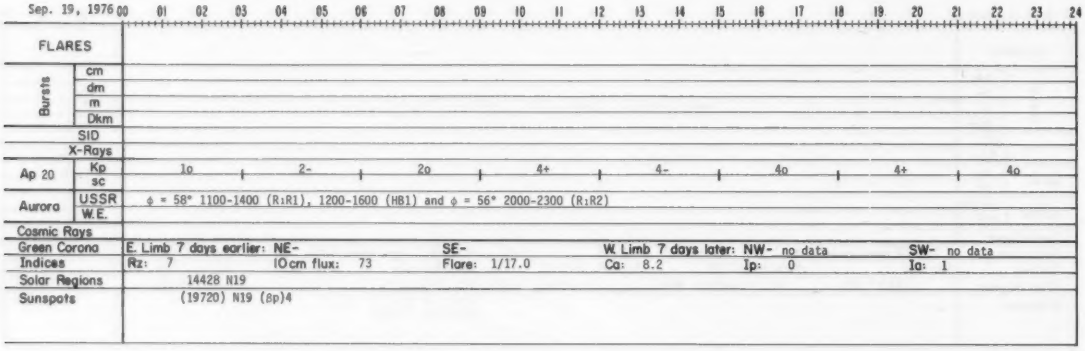
Indices — Rz: 14; 10cm flux: 75; Flare: 0/23.5; Ca: no data; Ip: 0; Ia: 2

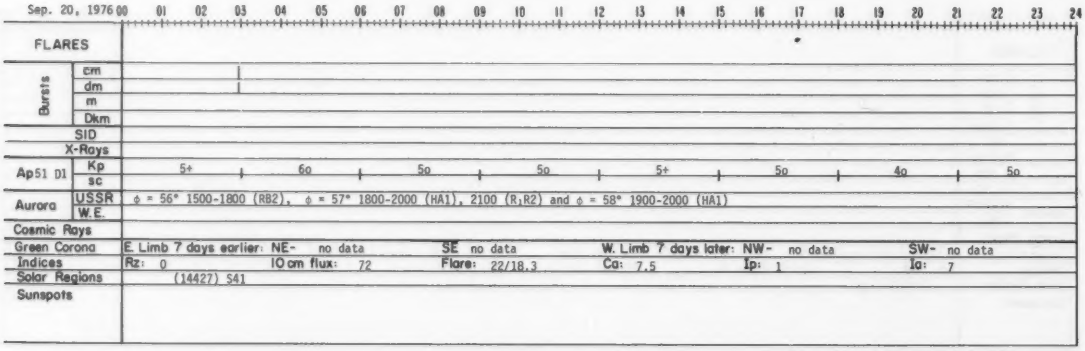
Solar Regions — (14418) N04

Sunspots


Sep. 17, 1976
00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
FLARES
1n/29
Bursts
cm
dm
m
Dkm
IV
IV
SID
X-Rays
Ap 10
Kp
2o 3- 2o 2- 2- 1- 3- 4o
sc
Aurora
USSR
W.E.
Cosmic Rays
Green Corona
E. Limb 7 days earlier: NE- no data SE- no data W. Limb 7 days later: NW- SW-
Indices
Rz: 8 10cm flux: 76 Flare: 5/22.8 Ca: 4.4 Ip: 0 Ia: 2
Solar Regions
(14441) N25 (14431) N30
Sunspots


Sep. 18, 1976
00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
FLARES
Bursts
cm
dm
m
Dkm
SID
X-Rays
Ap 33 02
Kp
3- 5+ 6o 5+ 5- 3- 1+ 1+
sc
Aurora
USSR
φ = 60° 0800 (R1A2), 1100 (HA1) and φ = 56° 1300-1600 (HB1-2)
W.E.
Cosmic Rays
Green Corona
E. Limb 7 days earlier: NE- SE W. Limb 7 days later: NW- SW-
Indices
Rz: 8 10cm flux: 74 Flare: 15/24.0 Ca: 6.8 Ip: 0 Ia: 4
Solar Regions
(14432) N53
Sunspots


Sep. 19, 1976
00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
FLARES
Bursts
cm
dm
m
Dkm
SID
X-Rays
Ap 20
Kp
1o 2- 2o 4+ 4- 4o 4+ 4o
sc
Aurora
USSR
φ = 58° 1100-1400 (R1R1), 1200-1600 (HB1) and φ = 56° 2000-2300 (R1R2)
W.E.
Cosmic Rays
Green Corona
E. Limb 7 days earlier: NE- SE- W. Limb 7 days later: NW- no data SW- no data
Indices
Rz: 7 10cm flux: 73 Flare: 1/17.0 Ca: 8.2 Ip: 0 Ia: 1
Solar Regions
14428 N19
Sunspots
(19720) N19 (βp)4


Sep. 20, 1976
00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
FLARES
Bursts
cm
dm
m
Dkm
SID
X-Rays
Ap 51 01
Kp
5+ 6o 5o 5o 5+ 5o 4o 5o
sc
Aurora
USSR
φ = 56° 1500-1800 (RB2), φ = 57° 1800-2000 (HA1), 2100 (R1R2) and φ = 58° 1900-2000 (HA1)
W.E.
Cosmic Rays
Green Corona
E. Limb 7 days earlier: NE- no data SE no data W. Limb 7 days later: NW- no data SW- no data
Indices
Rz: 0 10cm flux: 72 Flare: 22/18.3 Ca: 7.5 Ip: 1 Ia: 7
Solar Regions
(14427) S41
Sunspots

Sep. 21, 1976 00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

FLARES		1n/25 — 1n/25
Bursts	cm	
	dm	
	m	
	Dkm	
SID		
X-Rays		
Ap24 D4	Kp	4o 4o 3- 3+ 4o 5- 3+ 4-
	sc	
Aurora	USSR	ϕ = 57° 1100-1200 and 1400 (HA1)
	W.E.	
Cosmic Rays		
Green Corona		E. Limb 7 days earlier: NE- SE- bright W. Limb 7 days later: NW- no data SW- no data
Indices		Rz: 0 10 cm flux: 70 Flare: 52/20.1 Ca: 7.0 Ip: 0 Ia: 6
Solar Regions		14425 S12
Sunspots		(19719) S13 (αf)4

Sep. 22, 1976 00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

FLARES		
Bursts	cm	
	dm	
	m	
	Dkm	
SID		
X-Rays		
Ap 17	Kp	3o 4- 3+ 3o 3o 4- 3o 3o
	sc	
Aurora	USSR	
	W.E.	
Cosmic Rays		
Green Corona		E. Limb 7 days earlier: NE- SE W. Limb 7 days later: NW- SW-
Indices		Rz: 0 10 cm flux: 70 Flare: 0/23.9 Ca: 7.3 Ip: 0 Ia: 6
Solar Regions		(14443) S15
Sunspots		

Sep. 23, 1976 00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

FLARES		
Bursts	cm	
	dm	
	m	
	Dkm	
SID		
X-Rays		
Ap 12	Kp	2- 2- 4o 4- 3+ 2o 2+ 1+
	sc	
Aurora	USSR	
	W.E.	
Cosmic Rays		
Green Corona		E. Limb 7 days earlier: NE- no data SE- no data W. Limb 7 days later: NW- no data SW- no data
Indices		Rz: 7 10 cm flux: 72 Flare: 0/24.0 Ca: 6.4 Ip: 0 Ia: 4
Solar Regions		(14436) N08 14429 N24 (2)
Sunspots		

Sep. 24, 1976 00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

FLARES		
Bursts	cm	
	dm	
	m	
	Dkm	
SID		
X-Rays		
Ap7 Q7A	Kp	3o 1+ 1o 2+ 2- 1o 1+ 2-
	sc	
Aurora	USSR	ϕ = 57° 1300-1700 (HB1) and ϕ = 56° 1800 (R_3B)
	W.E.	
Cosmic Rays		
Green Corona		E. Limb 7 days earlier: NE- SE W. Limb 7 days later: NW- no data SW- no data
Indices		Rz: 7 10 cm flux: 72 Flare: 5/23.5 Ca: 5.9 Ip: 0 Ia: 6
Solar Regions		(14451) S08 14444 S08 (14435) N38 (14437) N22
Sunspots		

Sep. 25, 1976 00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

FLARES

Bursts: cm, dm, m, Dkm

SID

X-Rays

Ap 24 D3 — Kp: 4o | 3o | 4- | 4- | 3+ | 4o | 4o | 4+ ; sc

Aurora — USSR, W.E.

Cosmic Rays

Green Corona — E. Limb 7 days earlier: NE- SE- W. Limb 7 days later: NW- no data SW- no data

Indices — Rz: 16 10cm flux: 73 Flare: 5.1 Ca: 0/21.4 Ip: 0 Ia: 0

Solar Regions — (14448) N05 (14440) N24

Sunspots

Sep. 26, 1976 00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

FLARES

Bursts: cm, dm, m, Dkm

SID

X-Rays

Ap 13 — Kp: 5- | 3- | 2- | 2o | 2+ | 2o | 3- | 2+ ; sc

Aurora — USSR: ϕ = 53° 1500-1600 (R_2R1); W.E.

Cosmic Rays

Green Corona — E. Limb 7 days earlier: NE- SE W. Limb 7 days later: NW- SW-

Indices — Rz: 17 10cm flux: 72 Flare: 0/24.0 Ca: no data Ip: 0 Ia: 0

Solar Regions — (14457) N03

Sunspots

Sep. 27, 1976 00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

FLARES

Bursts: cm, dm, m, Dkm

SID

X-Rays

Ap 12 — Kp: 3o | 3- | 3- | 3+ | 3- | 3- | 2o | 3- ; sc

Aurora — USSR, W.E.

Cosmic Rays

Green Corona — E. Limb 7 days earlier: NE- no data SE- no data W. Limb 7 days later: NW- SW-

Indices — Rz: 18 10cm flux: 73 Flare: 2/23.1 Ca: 7.0 Ip: 0 Ia: 1

Solar Regions — (14458) N23 (14452) N28

Sunspots — N28

Sep. 28, 1976 00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

FLARES

Bursts: cm, dm, m — noise storm ←——→, Dkm

SID

X-Rays

Ap 5 Q4 — Kp: 2o | 2+ | 1+ | 1- | 0+ | 1- | 2o | 2o ; sc

Aurora — USSR, W.E.

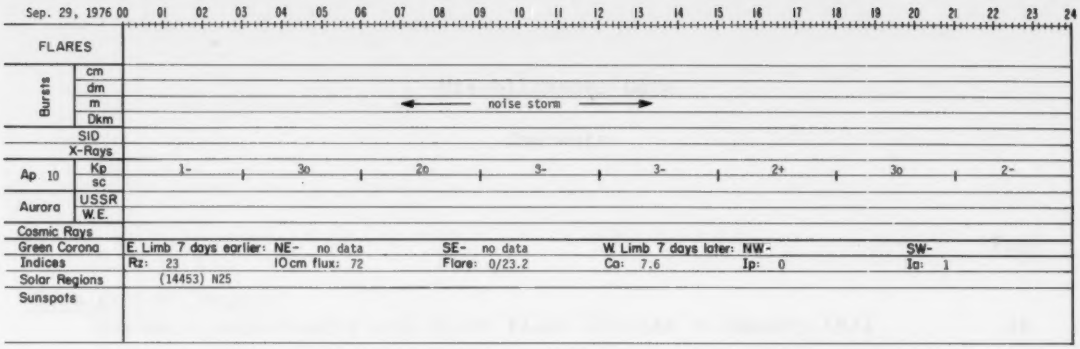
Cosmic Rays

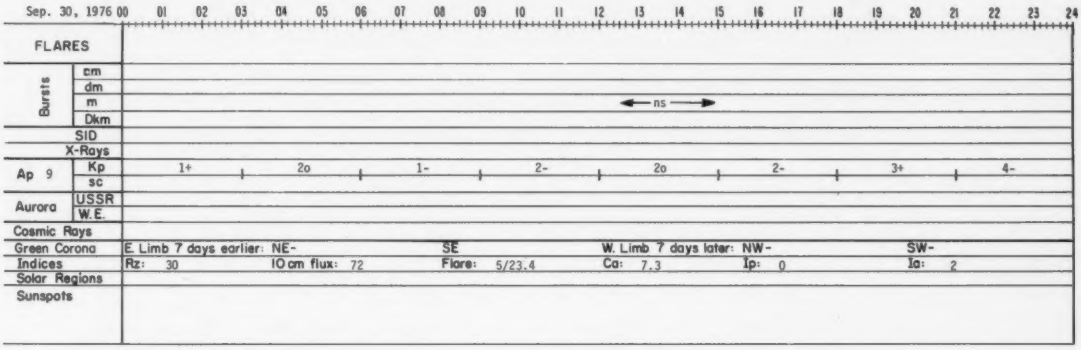
Green Corona — E. Limb 7 days earlier: NE- no data SE no data W. Limb 7 days later: NW- SW-

Indices — Rz: 18 10cm flux: 73 Flare: 1/23.3 Ca: 7.9 Ip: 0 Ia: 1

Solar Regions — (14442) S04 (14449) N08 (14462) N03

Sunspots





REGIONAL FLARE INDEX
INCLUDES ALL FLARES

MC MATH PLAGE NO.	LAT	CMP DATE	DATE FIRST FLARE	DATE LAST FLARE	FLARE-INDEX SUM	FLARE-INDEX MEAN	TOTAL NO. OF FLARES
14395	N17	76/09/03.6	76/09/03	76/09/08	53.38	8.90	15
14416	S22	76/09/11.7	76/09/08	76/09/14	26.36	3.77	11
14408	N12	76/09/11.9	76/09/06	76/09/06	.84	.84	1
14425	S11	76/09/21.0	76/09/17	76/09/21	88.36	17.67	6
14429	N23	76/09/23.9	76/09/17	76/09/24	12.17	1.52	4

Note:
Because of differences in method of calculation, the dates of Central Meridian Passage for the McMath Plage Regions vary somewhat from those given elsewhere. Any region not listed here produced no flares during its disk passage.

SGD 392 Part II (Comprehensive)

Miscellaneous Data

Contents

Page

Geomagnetic Indices
Sudden Commencements and Solar Flare Effects - January 1977 38

SUDDEN COMMENCEMENTS AND SOLAR FLARE EFFECTS

JANUARY 1977

PRELIMINARY REPORT ON RAPID MAGNETIC VARIATIONS (by Dr. A. Romana)
The meaning of the station symbols is given in the IAGA-Bulletin nr. 32.
Times of ssc are mean values.

Sudden commencements followed by a magnetic storm or a period of storminess (ssc)

28 1839 A: LG CI; B: TL LM; C: WI NI EB
28 2012 B: DU; C: KG
28 2036 A: AE; B: SZ

Solar-flare effects (sfe)

Effects confirmed by ionospheric or solar observations are underlined.

None

Very unusual events

28 2050 bp: A: WN KG
2049-2135 pi 1-2: A: WN(90s 25 γ); B: SO
2055-2100, 2103-2107 } psc: A: FU ($\sim$ 100s 3-4 γ)

Note: psc = pulsational single event (probably pi2)

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Prepared by World Data Center A for Solar-Terrestrial Physics, NOAA, Boulder, Colorado, U.S.A.

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